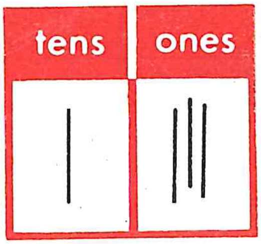
3

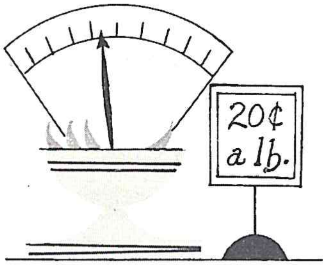
EXPLORING

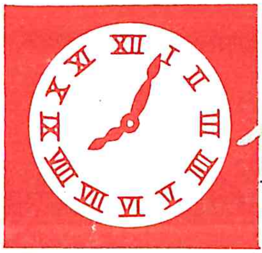
Arithmetic

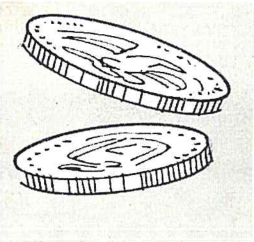
EXPLORING ARITHMETIC

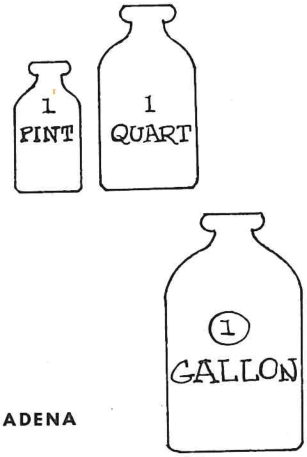
Original Grade 3 Textbook
(Printed in 1957)











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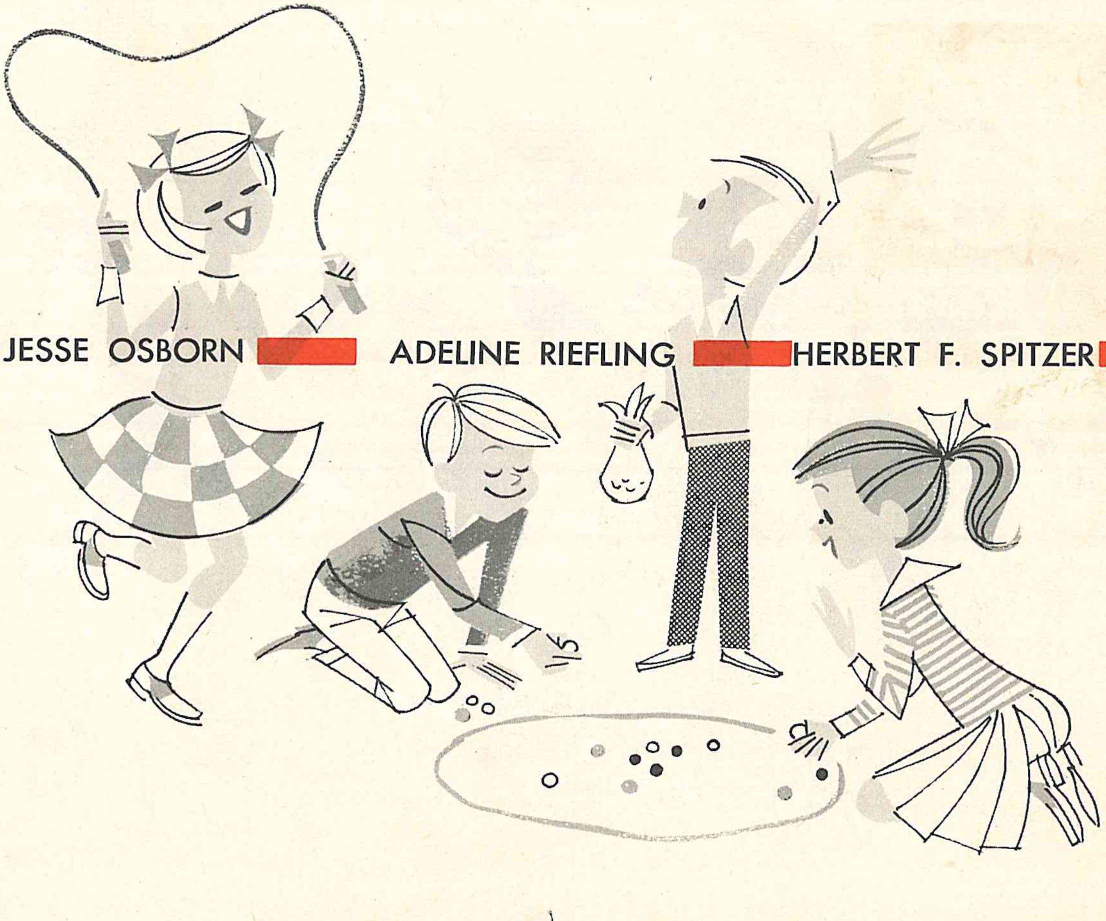
EXPLORING
Arithmetic



JESSE OSBORN **ADELINE RIEFLING** **HERBERT F. SPITZER**

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TABLE OF CONTENTS

READINESS 1...20
Making helps for learning arithmetic
Putting groups or amounts together
Taking away from a group
Finding equal parts of a group
Showing tens
Writing figures
Using a calendar

UNIT ONE 21...48
The meaning of numbers
Reading and writing three-digit numbers
The meaning of addition
Proving addition
Using the number question
How to study addition facts

UNIT TWO 49...72
The meaning of subtraction
How to study subtraction facts
Choosing the correct number question: addition or subtraction
Adding and subtracting tens and hundreds
Zeros in addition and subtraction
Measuring weight

UNIT THREE 73...98
The hundred important addition facts completed
The hundred important subtraction facts completed
Adding and subtracting ones, tens, and hundreds
Using a dozen

UNIT FOUR
99...124
Column addition of one- and two-digit numbers
Learning about halves, fourths, and thirds
Adding and subtracting money less than a dollar
Changing ones to tens (carrying)
Changing tens to ones (borrowing)

UNIT FIVE
125...146
Column addition of three-digit numbers
Adding by endings
Carrying tens to hundreds
Telling time
Learning about Roman numerals

UNIT SIX
147...174
Using the ruler
Writing dollars and cents
Adding and subtracting dollars and cents
Carrying twice in addition
Borrowing from hundreds
Borrowing twice in subtraction

UNIT SEVEN
175...204
Reading and writing four-digit numbers
A new check for addition
More problems and practice using addition
More problems and practice using subtraction

UNIT EIGHT
205...226
The meaning of multiplication
Ways to find the answer to a multiplication question
How to study multiplication facts
Choosing the correct number question:
  addition, subtraction, or multiplication
Making a table of multiplication facts for 2

UNIT NINE

227...254

Making tables of multiplication facts for 3, 4, and 5
Multiplying tens and hundreds
Carrying from ones to tens in multiplication
Carrying from tens to hundreds in multiplication
Carrying twice in multiplication
Multiplying dollars and cents
Learning multiplication facts
Zeros in multiplication

UNIT TEN

255...274

The meaning of division
Ways to find the answer to a division question
Choosing the correct number question:
addition, subtraction, multiplication, or division
How to study division facts

UNIT ELEVEN

275...294

Learning about fifths
Finding equal parts of a whole
Finding equal parts of a group
Using 2, 3, 4, and 5 in division
Dividing tens and hundreds
Dividing dollars and cents

UNIT TWELVE

295...314

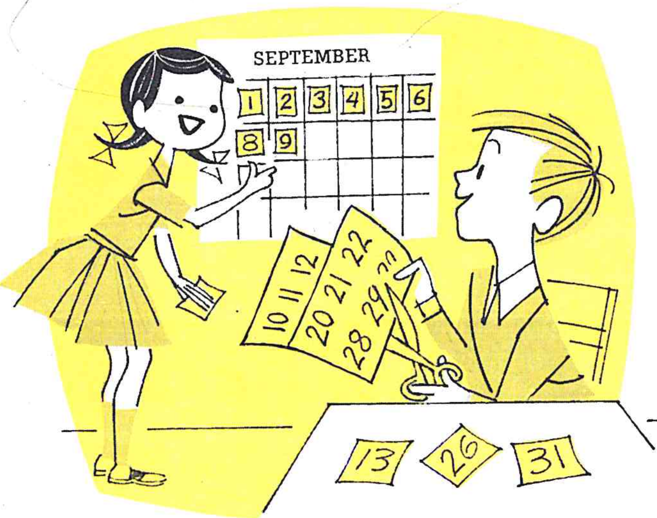
Using measures of length, liquids, and time
Division that does not come out even
Problems and practice using the year's work

EXTRA PRACTICE

315...323

Important addition, subtraction, multiplication, and division facts
Special practice exercises

INDEX–324...328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8 9
10 11 12
20 21 22
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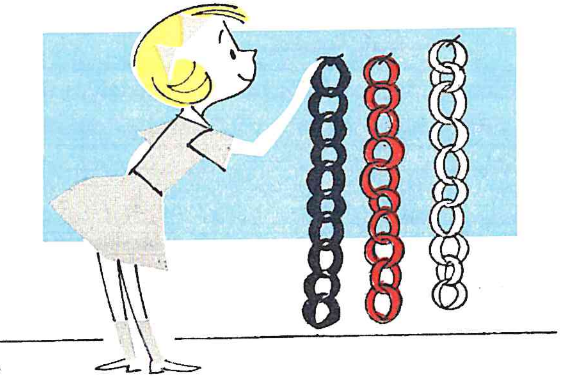
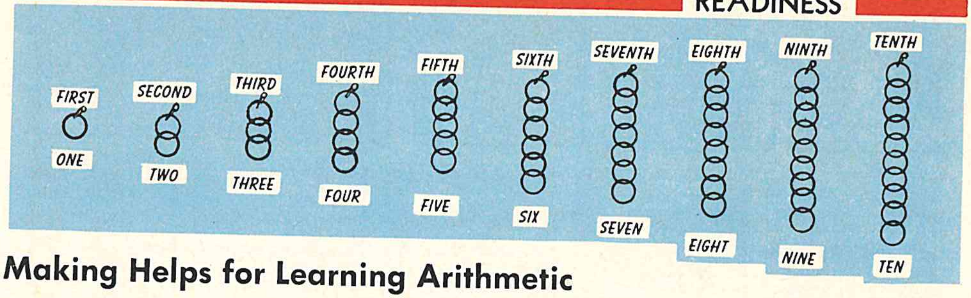
31

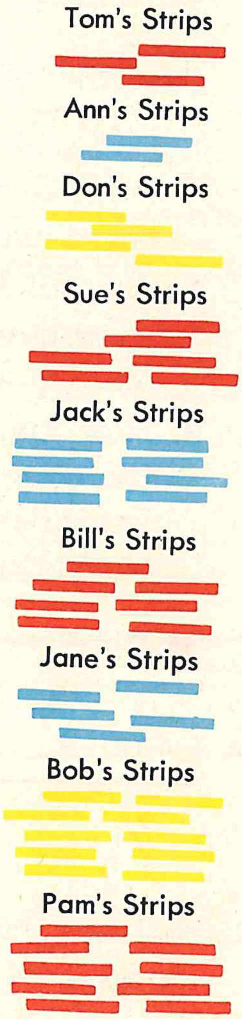




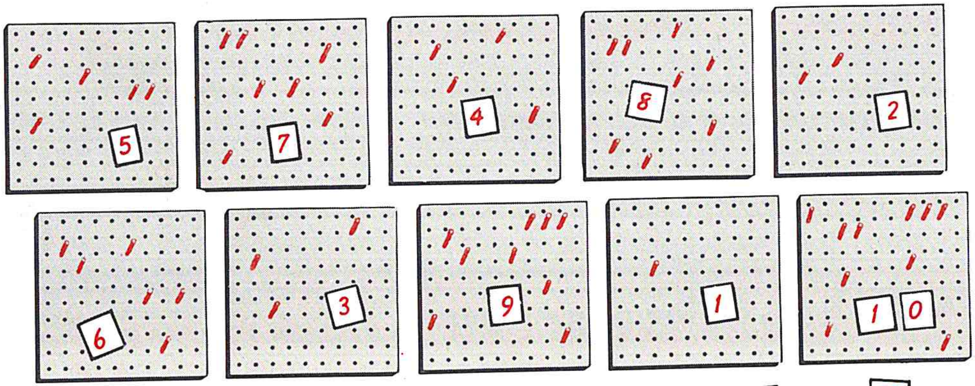
Making Helps for Learning Arithmetic

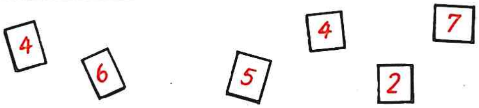
Look at these children working. They are making things to help them learn arithmetic.

1. Tell what some of the children are making.
2. Look at their bulletin board. How many rings are there on the first pin? The sixth? The tenth?
3. Two or more rings make a chain. Point to the shortest chain. To the longest.
4. Draw a chain with 5 rings. With 9 rings.
5. The children use paper strips to make chains. Point to Tom's strips. Draw the chain he can make with his strips.
6. Draw the chains the other children can make. Write the child's name under his chain.



Begin making arithmetic helpers today. You will need them later. Your teacher will help.

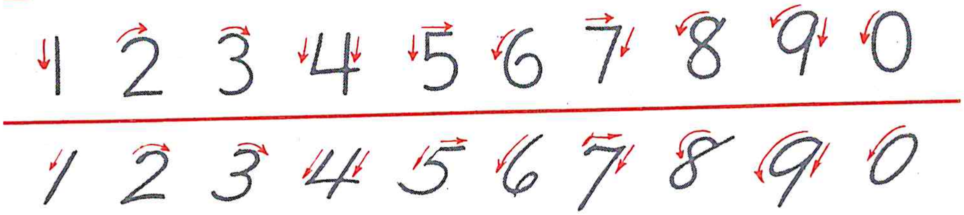




Showing How Many

1. Don made these peg boards. Then he put pegs in them. Point to the board with the most pegs. Point to the board with the fewest pegs.
2. Sue put number cards on the boards. The numbers show how many pegs. Did Sue put the right number on each board? How can you tell?
3. How many pegs are there in the first board? Yes, there are five pegs. **Five** is the name of a number. To write how many pegs, you can write the word **five**. A shorter way is to write the figure 5.

■ **Here are all the figures used in writing numbers:**



4. Read the figures aloud. The figure 0 is read **zero**.
5. See how well you can write the figures.

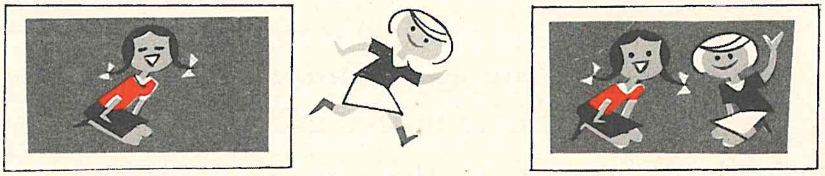
Making a Group

"Let me take your picture," said Tom. Ann sat very still. Click! Her picture was taken.

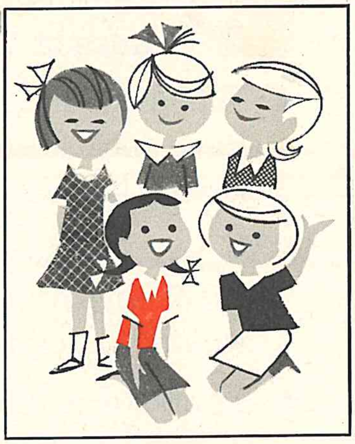
"Now will you take my picture?" asked Jane.

"Yes," said Tom. "Sit with Ann. I will take Ann and you together in a group."

1. How many girls are there in this group?



1 girl and 1 girl are 2 girls



"Now I will take a larger group," said Tom.

2. Count the girls in the larger group. How many are there?
3. Point to the smaller group. How many are in it?

■ **A group has two or more things in it.**

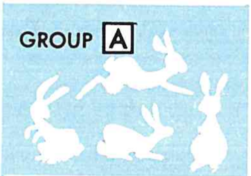
4. Can you call Ann's picture a group? Why?

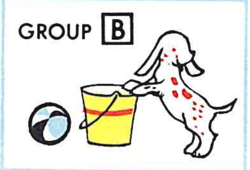
Learning More About Groups

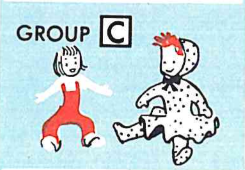
■ **Two or more things together make a group. Sometimes the things in a group are alike. Sometimes they are not alike.**

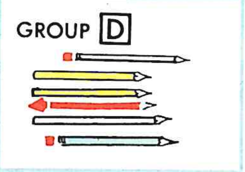
■ **When you give all the things in a group the same name, you are thinking of them as like things.**

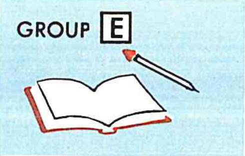
1. Look at group A and group B. Which is a group of like things? How can you tell?
2. In which group do you think the things are not alike? Think! Things that are not alike have different names. Name the different things in this group.
3. Look at groups C through H. Tell which groups have like things. Give the names of the like things.
4. Which of groups C through H do not have like things? Name the different things in each of these groups.
5. If you wanted to give a like name to the 2 boys and 3 girls in group F, what would you call them?
6. Think of a like name for the dog and 2 cats in group G. For the man and 2 children in group H.

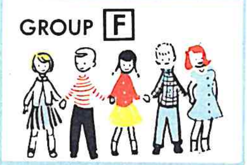

GROUP A

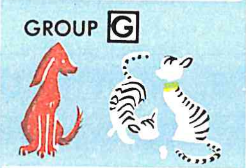

GROUP B

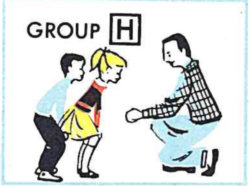

GROUP C


GROUP D


GROUP E


GROUP F


GROUP G

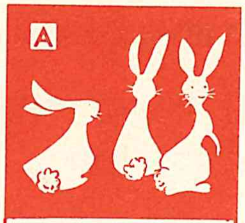

GROUP H

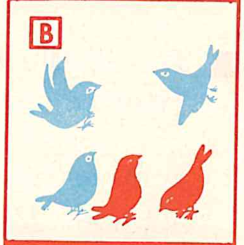
Counting the Ones in a Group

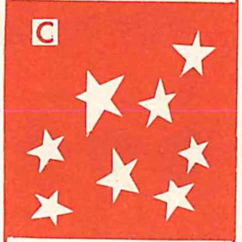
1. Look at these groups. How many things are there in group A? In group B? In group C? In group D?
2. Which group has the most things in it? Which group has the fewest things? How did you find out?

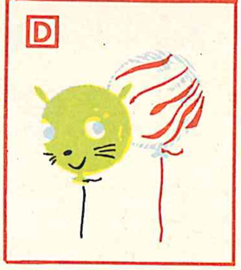
■ **When you think, "How many things?" you are thinking, "How many ones?"**

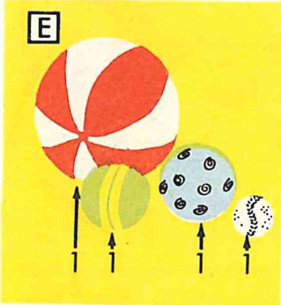
3. Look at the groups below. Count the things in each group. Then tell how many ones there are in the group.

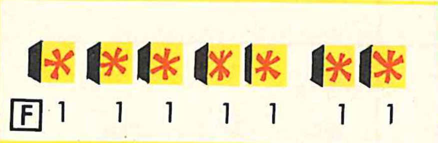


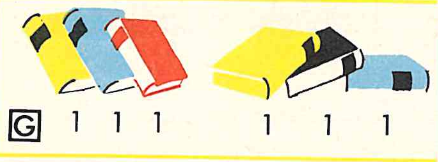










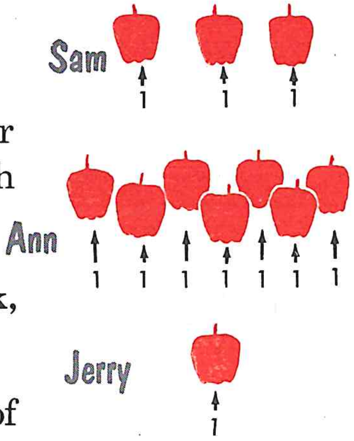


4. The teacher told these children to choose a group on this page. She said, "Show how many ones in your group." Tell which group each child chose.

Tom	Kim	Mae	Joe	Bob
ones	ones	ones	ones	ones
8	4	6	7	5

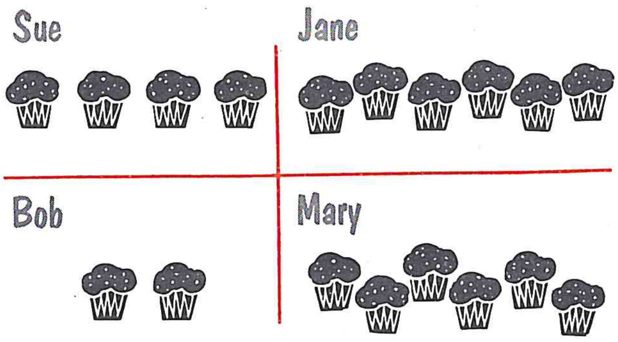
Telling the Amount

1. These children brought apples for a picnic. What amount did each child bring?



■ **To tell the amount, you must think, "How many ones?"**

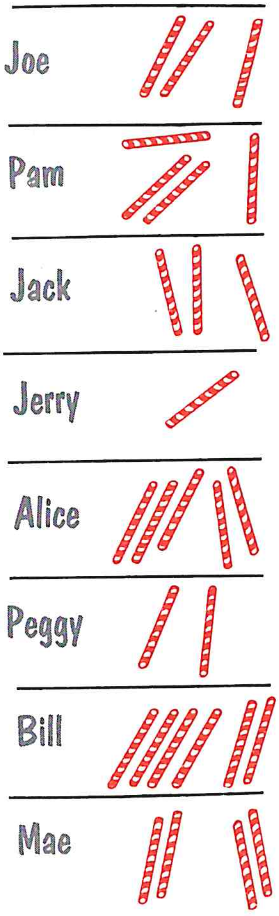
2. Who brought the largest amount of apples? How can you tell? Which child brought the smallest amount?



3. Look at the cup cakes that other children brought. What amount did Sue bring? Jane? Bob? Mary?
4. Which children brought an equal amount of cakes?

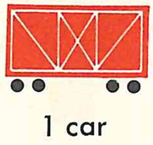
■ **Amounts or groups are equal if they have the same number of like things.**

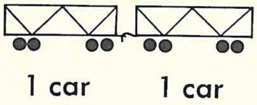
5. Which children brought an equal amount of candy?

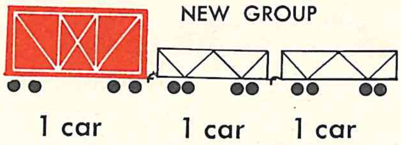


Putting Amounts or Groups Together

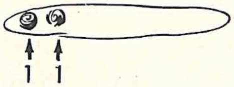
1. Joe had 1 car. Bob had 2 cars. They put their cars together. Which picture shows Bob's cars? Joe's car? What does picture C show?

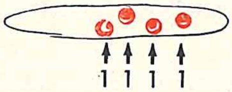
A


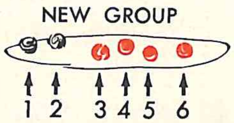
B


C


2. Jim had 2 marbles and 4 marbles. He put them together in one ring. How many marbles are there in group D? In group E? In the new group?

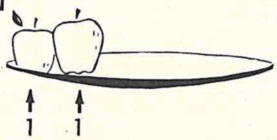
D


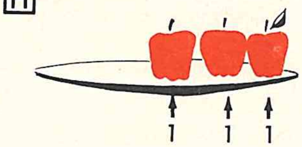
E


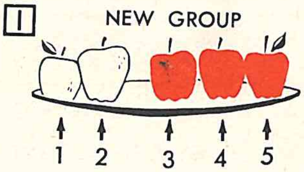
F


■ **You can put groups or amounts of like things together. This makes a new group.**

3. Count the apples in the new group. Write this number. Count together the apples in group G and group H. Write this number. What number did you write both times?

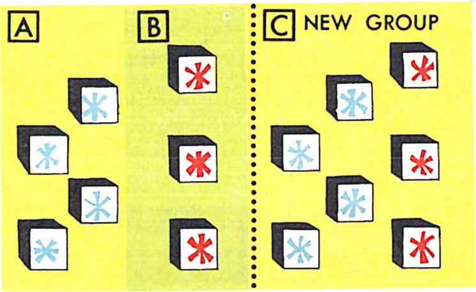
G


H


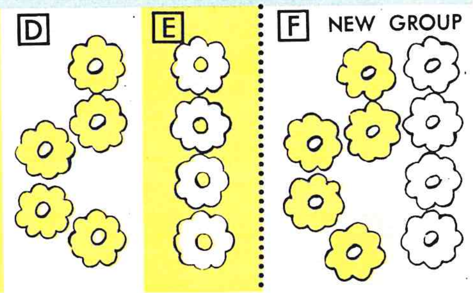
I


■ **When you put two groups or amounts together, the new group has the same number of things as the two groups or amounts counted together.**

Picture 1



Picture 2

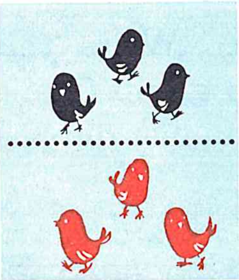


"How Many?" and "How Many in All?"

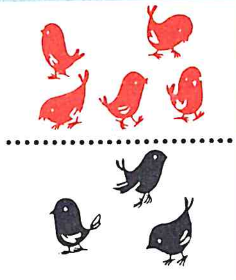
1. Which new group shows 5 things and 4 things put together? Five and four are how many?
2. Which picture shows 4 things and 3 things put together? How many things are there in all?

■ **When you put groups or amounts together, you can count and tell "How many" or "How many in all."**

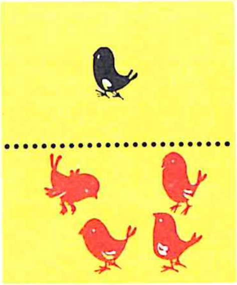
Picture 3



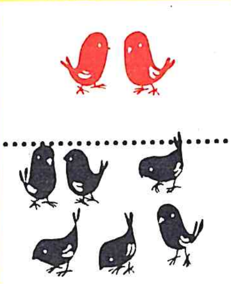
Picture 4



Picture 5



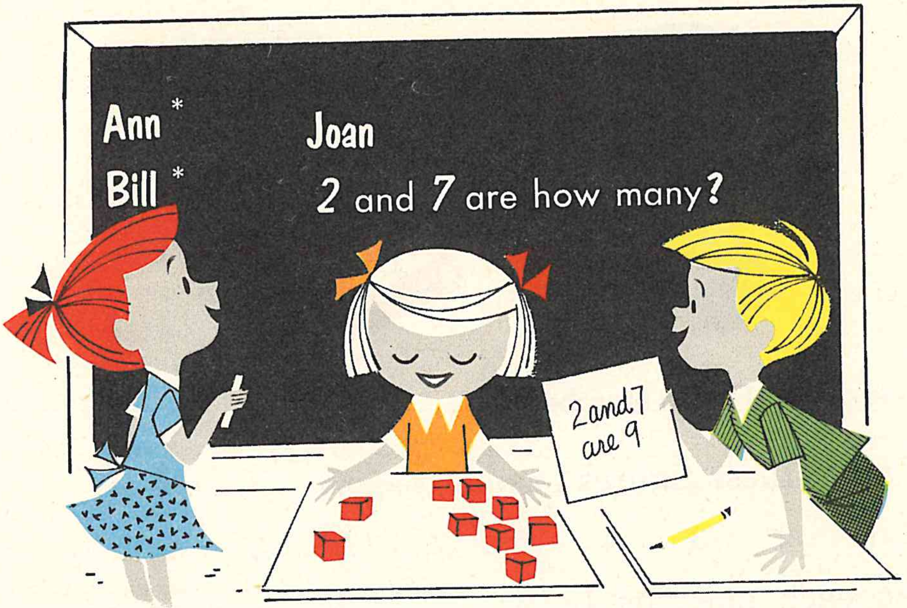
Picture 6



3. Answer these questions. Tell which picture helped you to answer each question.

4 and 3 are how many?
2 and 6 are how many?
5 and 4 are how many?

3 and 3 are how many?
1 and 4 are how many?
5 and 3 are how many?

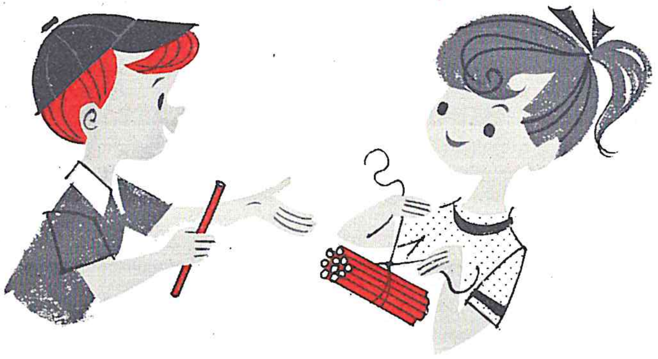


Show and Write

Joan puts a question on the blackboard. Ann shows the answer with blocks. Bill writes the answer on his paper. Then Joan counts Ann's blocks, and looks at the answer Bill wrote. Ann and Bill get a star each time they are right.

Choose a partner. Play "Show and Write." Show and write the answers to the questions below. If you have no blocks, use books, pencils, pieces of paper, straws, or paper clips.

1. 5 and 2 are how many?
2. 3 and 2 are how many?
3. 6 and 1 are how many?
4. 2 and 2 are how many?
5. 3 and 4 are how many?
6. How many are 3 and 6?
7. How many are 1 and 7?
8. How many are 4 and 4?
9. How many are 6 and 3?
10. How many are 1 and 6?



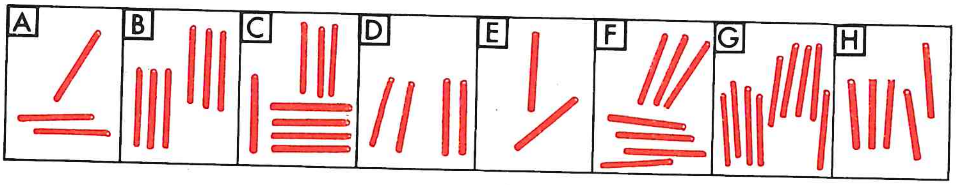
Ten Is a Two-Figure Number

Write these figures on your paper:

1 2 3 4 5 6 7 8 9 0

Read each question below. Find the answer, or how many. Then cross out your figure that tells how many.

1. How many sticks is Jack holding up?
2. How many sticks has he in his other hand?
3. How many sticks does each group below show?



Now your figures look like this:

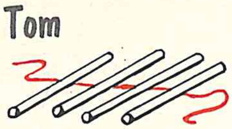
~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ ~~6~~ ~~7~~ ~~8~~ ~~9~~ ~~0~~

All the figures are crossed out. You used all of them.

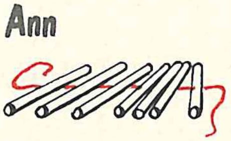
4. How many sticks is Sue tying in a group or bundle? How can you write ten? You have no single figures left. To write ten, you must use two figures, or 10.

Making a Bundle of Ten Straws

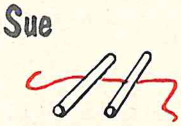
Use 10 soda straws. If you have no straws, use 10 pencils. Show or act out the answer for each question.



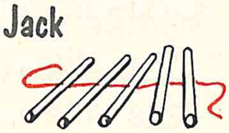
1. Tom has 4 straws. How many more must he get to make a bundle of 10 straws?



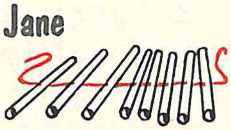
2. Ann has 7 straws. How many more must she get to make 10 straws?



3. Help Sue. Two straws and how many more will make 10 straws?

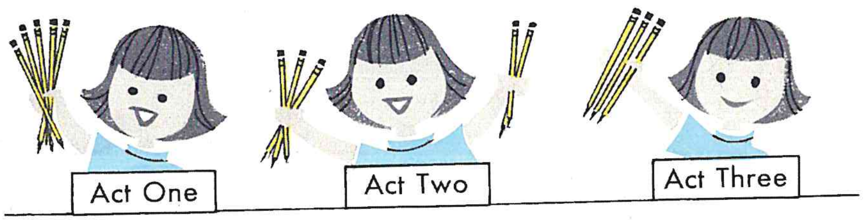


4. Show Jack the answer to his question:
   5 and how many more are 10?



5. Jane can tie her bundle when she gets how many more straws? Think: 8 and how many more are 10?
6. Have someone act out these questions.
   You will write the answers, as:

3 and how many more make 10?	3 and 7 are 10
6 and how many more make 10?	6 and ? are 10
1 and how many more make 10?	1 and ? are 10
9 and how many more make 10?	9 and ? are 10
5 and how many more make 10?	5 and ? are 10



Taking Away from a Group

Act One: Ann is showing you a group of how many pencils?

Act Two: How many pencils is she taking away from the group?

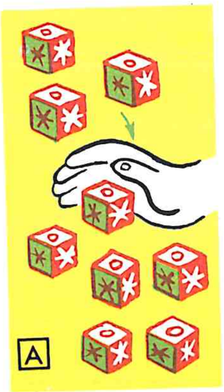
Act Three: How many pencils are left?

Ann has showed you the answer to the question:

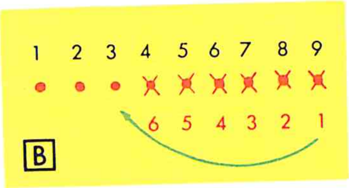
5 take away 2 is ⍰ or 2 from 5 is ⍰

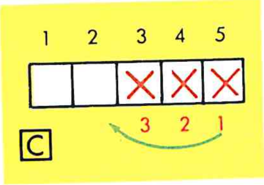
Use straws or pencils. Act out the answer to each question. Then write the answer to the question.

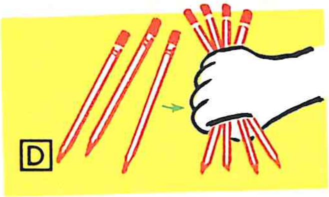
1. 6 take away 3 is ⍰
2. 8 take away 4 is ⍰
3. 9 take away 4 is ⍰
4. 10 take away 5 is ⍰
5. 5 take away 1 is ⍰
6. 3 from 4 is ⍰
7. 5 from 7 is ⍰
8. 3 from 9 is ⍰
9. 8 from 8 is ⍰
10. 3 from 8 is ⍰



11. Which pictures show 6 from 9 is 3?
Which picture shows 3 from 5 is 2?
Which shows 7 take away 4 is 3?



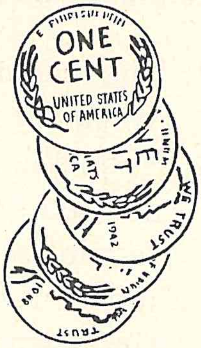




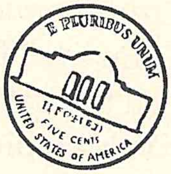
Peeking into Your Pocketbook

1. A cent is sometimes called a penny. Name something you can buy for a cent.
2. A 5-cent piece is often called a nickel. Name something that you can buy for a nickel.
3. Which would you rather have, the money shown in picture A or in picture B?
4. A dime is worth 2 nickels, or 10 cents. Name something you can buy for a dime.

Picture A

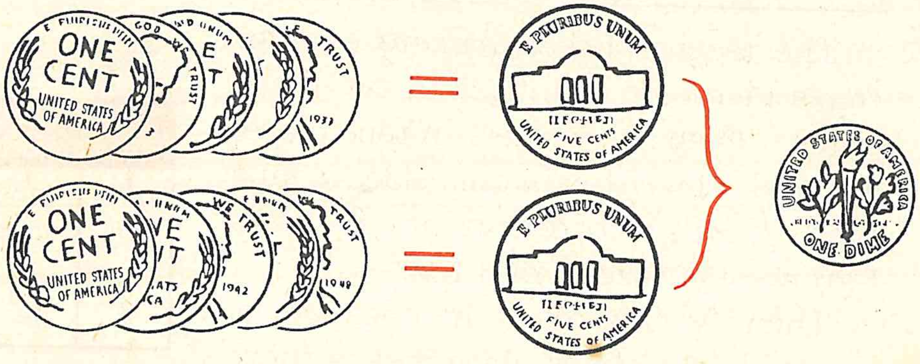


Picture B



■ **Pennies, nickels, and dimes are made of metal. A piece of money made of metal is called a coin.**

5. Name 3 coins that are each worth more than a dime.
6. Joe has 2 nickels. How many cents has he?



7. What coins can Joe use to pay for a 10¢ ball?
8. Jane bought a 5¢ apple. She gave the grocer a dime. Name the coins he can give her as change.

Learning More About Ten

1. The teacher wrote 10 on the blackboard. What figures did she write?
2. Then she drew a frame around 10. She showed two places in the frame. Point to ones place. Move your finger to the left of the frame. What place do you find there?
3. What figure do you see in ones place? In tens place?

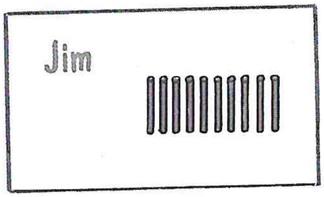
Two-Figure Number

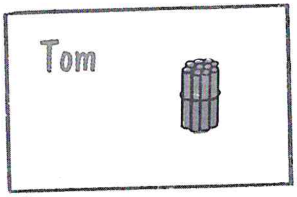
10

Two-Place Number

tens place	ones place
1	0

4. Jim and Tom drew sticks. They wanted to show what the figures in 10 mean. Whose picture is right?





The teacher asked Ann to explain Tom's picture. Ann drew a two-place frame. Then she wrote 1 in tens place. She said, "1 written in tens place means 1 ten. Tom's picture is right. It shows 1 group of 10 sticks, or 1 ten."

Then Ann wrote 0 in ones place. She said, "0 in ones place means there are no ones in ones place. Tom's picture is right again. He showed no ones."

Ann

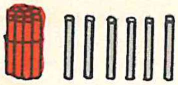
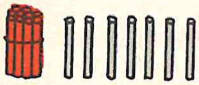
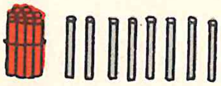
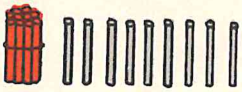
tens place	ones place
one ten	no ones
1	0

5. Why is Jim's picture wrong?

Numbers with One Ten and Ones

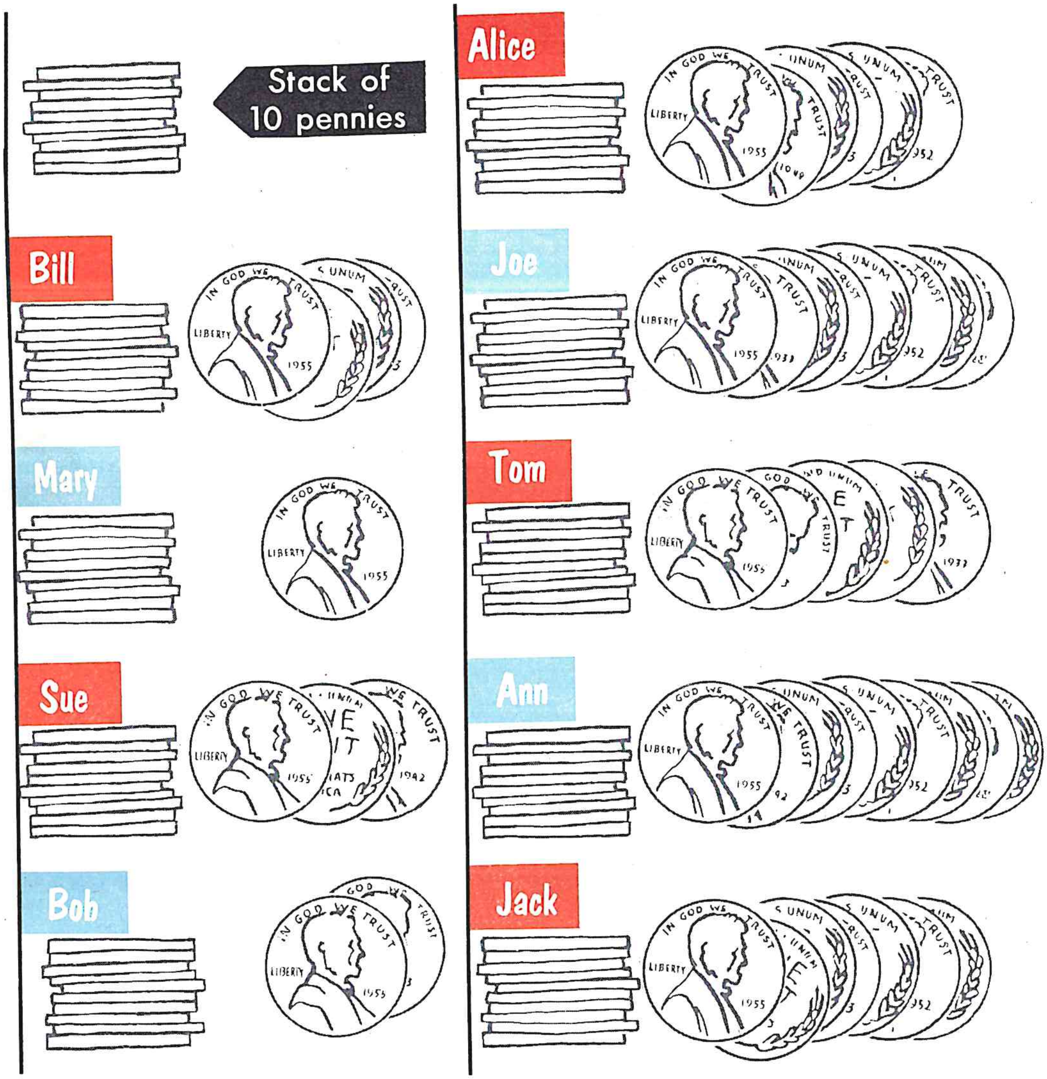
Jack showed the meaning of some numbers.

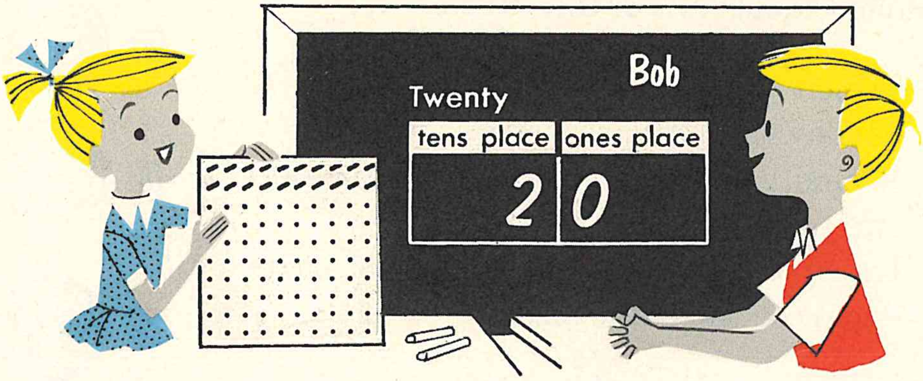
1. Read the numbers he showed.
2. How many sticks did he put in a bundle?
3. How many bundles did he use in each number?
4. Take turns. Read one of these numbers. Tell what Jack had to think to show its meaning.

STICKS	THINK			WRITE	READ
		tens	ones		
	ten and 1 more, or	1	1	11	eleven
	ten and 2 more, or	1	2	12	twelve
	ten and 3 more, or	1	3	13	thirteen
	ten and 4 more, or	1	4	14	fourteen
	ten and 5 more, or	1	5	15	fifteen
	ten and 6 more, or	1	6	16	sixteen
	ten and 7 more, or	1	7	17	seventeen
	ten and 8 more, or	1	8	18	eighteen
	ten and 9 more, or	1	9	19	nineteen

A Fast Way to Count Pennies

1. Write these children's names in a column. After each name, write the figure that tells how many pennies that child has. Count quickly.
2. What helped you count the pennies very fast?



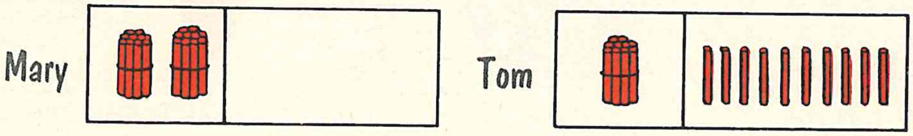


Twenty, or Two Tens

1. Jane is putting pegs in her peg board. Count the pegs in the first row. How many are there?

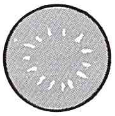
■ **In counting things, the last number counted tells how many things there are.**

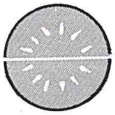
2. Count the pegs in the second row. How many are there?
3. Count all the pegs in Jane's board. How many are there in all?
4. Bob wrote twenty on the blackboard. Then he wrote twenty in figures. What figures did Bob use? What figure did he write in tens place?
5. Jane gave Mary and Tom some sticks. She told them to show 20 with sticks. Who showed 20 in the better way? Why?



Naming Equal Parts of One Whole

1. Which picture shows a whole pie? A whole cake?
2. Which pictures show a whole cut into two parts?
3. In which picture are the two parts equal, or the same size?

A


B


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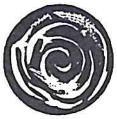
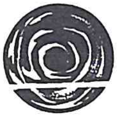
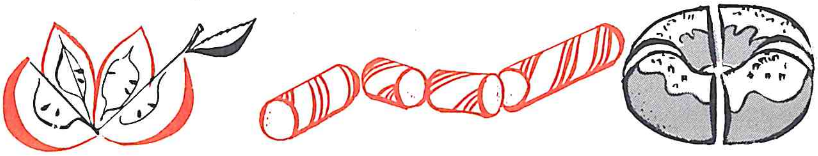


D


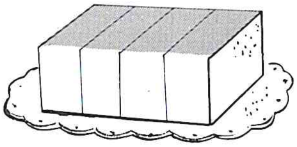
■ **A whole can be cut into two equal parts. Each of the equal parts is one half of the whole. One half is also written $\frac{1}{2}$.**

4. Which pictures below show a whole made into four parts? Which pictures show four equal parts?

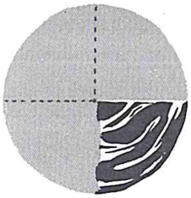


■ **A whole can be cut into four equal parts. Each of the four equal parts is one fourth of the whole. One fourth is also written $\frac{1}{4}$.**

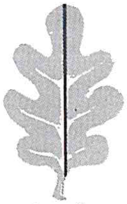
5. Which pictures below show halves? Which show fourths?
6. Which pictures below show one half? One fourth?



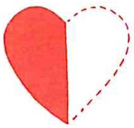
Cake



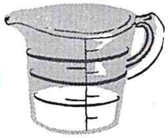
Cake



Leaf

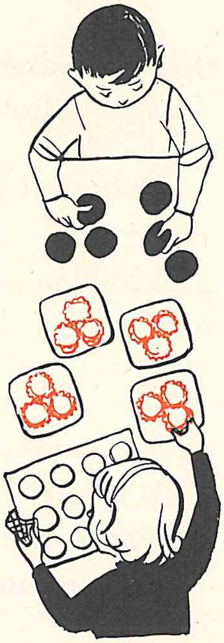


Paper Heart



Milk in Pitcher

Equal Parts of a Group of Things



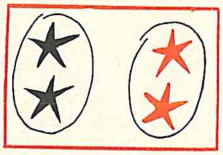
1. Tom made 6 cookies into two equal groups. How many cookies did he put in each group?

■ **When like things are made into two equal groups, or two equal parts, each part has the same number of things.**

2. Which of groups A through D show two equal parts?
3. Tom gave three of his cookies to Ann. What part of his cookies did he give her?

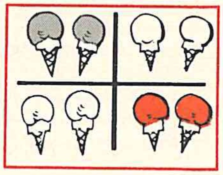
■ **When like things are made into two equal parts, each part is called one half.**

A



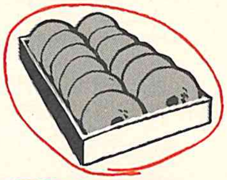
4. Ann had 12 cakes. She put a cake on each of four plates until she had no cakes left. What did she do to find out if the cakes were in equal groups? Are the groups, or parts, equal?

B



5. Which of groups A through D show four equal parts?

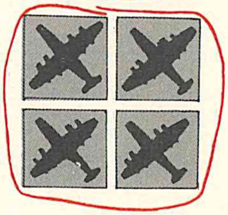
C



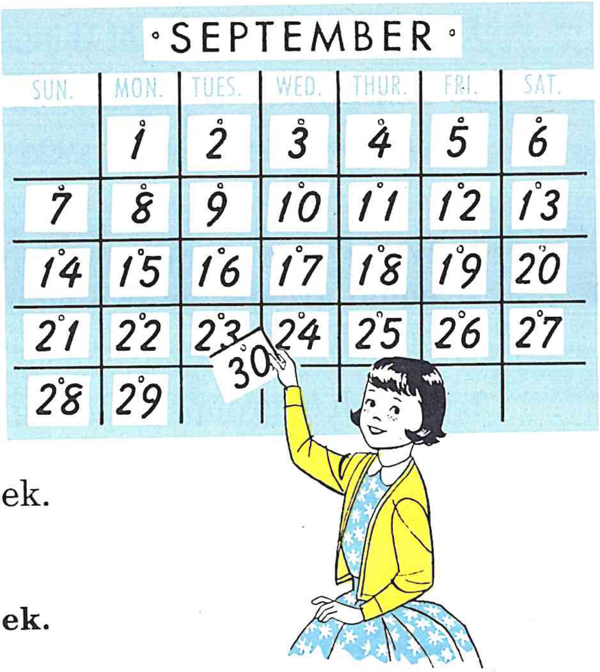
6. Ann gave Tom one of the four equal parts of her cakes. What part of her cakes did she give Tom?

■ **When like things are made into four equal parts, each part is called one fourth.**

D



Using Numbers to Make a Calendar

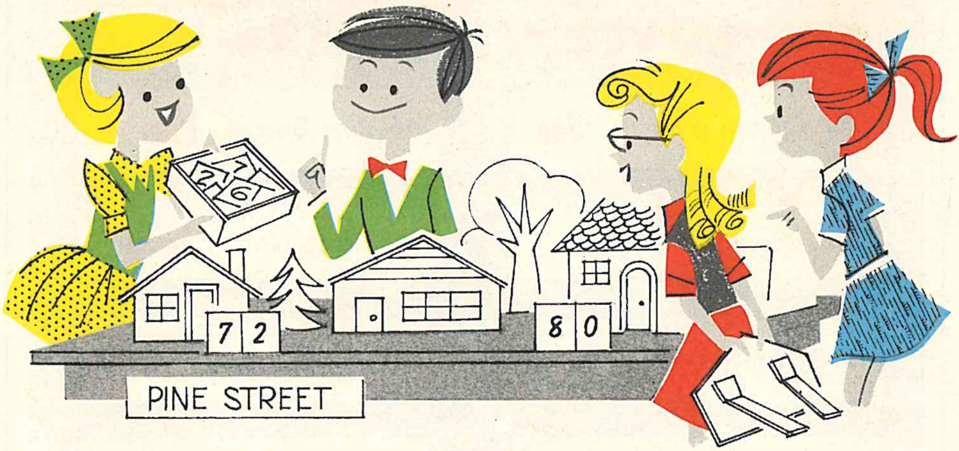


Mary cut up some old calendars. Now she is making a calendar for her class. Let us look at it.

1. For what month is the calendar?
2. Name the days of the week. Count them.

🟥 **There are 7 days in 1 week.**

3. Count the days in September. Begin, "One, two," and go on. How many days did you count?
4. Say the days in September this way: Begin, "September first, September second," and go on to the thirtieth of September. Point to each day as you count.
5. Joe pointed to the seventh, fourteenth, twenty-first, and twenty-eighth days. Did he point to the Saturdays in September, or to the Sundays?
6. On what day is September first on this calendar? September twenty-fifth? September eighteenth?
7. Play that your library book is due September nineteenth. In how many days will it be due if today is September twelfth?
8. Look at the September calendar in your classroom. Is it just like Mary's? Tell why.



A Number for Jack's House

1. These children are showing a street in their town. Ann and Sue put house numbers in front of their houses.

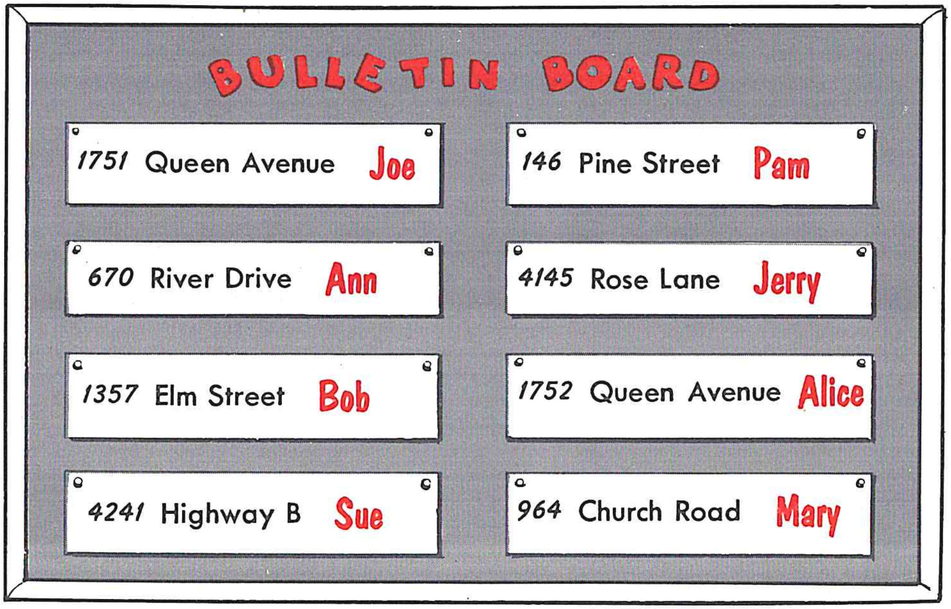
   What number do you think Jack will take for his house? Jack's house is between house numbers 72 and 80.

2. Jack said, "The first number for my house must be 7. Now pick the second number, Sally." She chose 5. Is this right?

   "Seventy-five is an odd number," said Jack. "Odd numbers are for the other side of the street."

■ **Numbers ending in 1, 3, 5, 7, and 9 are odd numbers.**

3. Jack told Sally to choose again. From how many numbers can she choose? What are they?
4. Sally chose 4. Write Jack's house number.



Even and Odd Numbers

1. Your house number helps the mailman get mail to you. How else is your house number useful?
2. Joe reads his house number: "Seventeen fifty-one Queen Avenue." Read the other house numbers. Read them the way Joe reads his.
3. Which children live on the same street? Do they live on the same side of the street? How can you tell?
4. Ann asked, "What makes a number even?" Read the answers the children gave. Which answer is best?

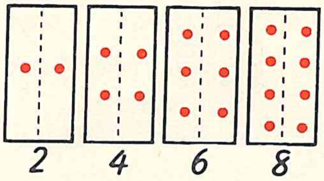
Bob: The even numbers are 2, 4, 6, and 8.
Sue: Even numbers can be made into two smaller numbers. The smaller numbers are equal.
Joe: An even number is equal to two smaller numbers.

Mary used dots. She made the numbers into two smaller numbers. She explained odd and even numbers like this:

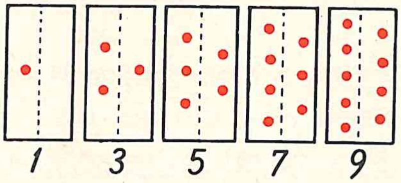
"Even numbers can be made into two smaller numbers that are the same, or equal.

"In odd numbers the smaller numbers cannot be made the same. The smaller numbers are not equal."

Even Numbers



Odd Numbers



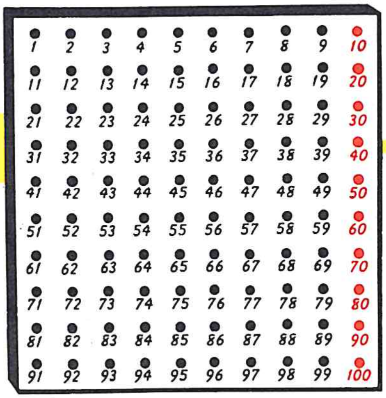
5. Use dots as Mary did. Show that 13 is an odd number. Show that 16 is an even number.
6. Is 10 odd or even? Use dots to show this.
7. Pam said Bob's answer did not answer Ann's question. Was she right?
8. Jerry said Bob's answer is not true, either. Can you change his answer to make it true?
9. Which house numbers on the bulletin board are on the odd side of the street? Which are on the even side?

🟥 **All even numbers end with 0, 2, 4, 6, or 8.**
All odd numbers end with 1, 3, 5, 7, or 9.

10. Write five two-figure numbers that are even. Have them begin with 1.
11. Write five two-figure numbers that are odd. Have them begin with 4.

Counting on a Peg Board

Numbers Fred Thinks

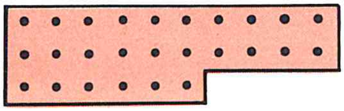


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

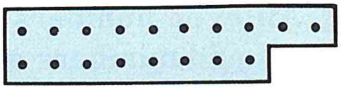
1. Fred is showing you his peg board. How many holes are there in one row? How many rows are there?
2. Fred often keeps score on his peg board. He puts in one peg for every point he makes in a game.

   Look at the numbers Fred must think to count his score. Read the numbers from one to one hundred. Then close your book and write them. Now open your book. See if you wrote every number from 1 to 100 correctly.
3. Counting every hole takes a long time. The red numbers show a shorter way. They show the tens. Count by tens to one hundred.
4. Count the holes shown below. Tell how many tens and how many ones there are in each picture.

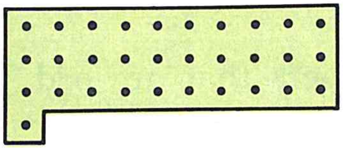
A



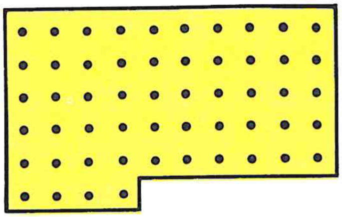
B



C



D

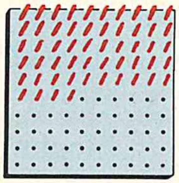


Thinking Tens and Ones

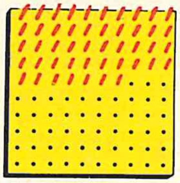
These children played a dart game. The red pegs in their boards show their scores.

1. Fred scored 54 points. Did he put the right number of pegs in his board?
2. What is Ann's score?
3. Mary said, "My score is six tens." Is she right?
4. Tom said, "I have six tens and two." Mary said, "Do you mean six tens and two tens?" What do you think Tom answered?
5. Read Tom's score for him. Use the word "ones" in the right place.
6. The one who fills his board first will win. How many more holes must Ann fill? Count the tens first. Then count the ones.
7. How many more must Tom fill?
8. How many more must Fred fill?

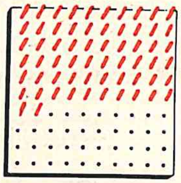
Fred



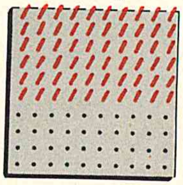
Ann



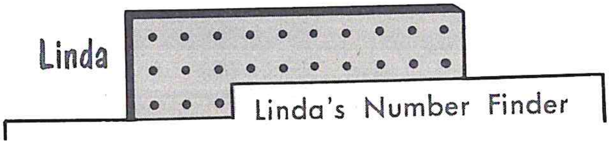
Tom

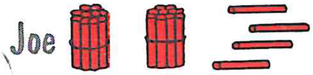


Mary



Showing What Tens Numbers Mean

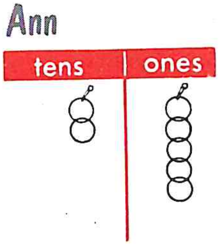


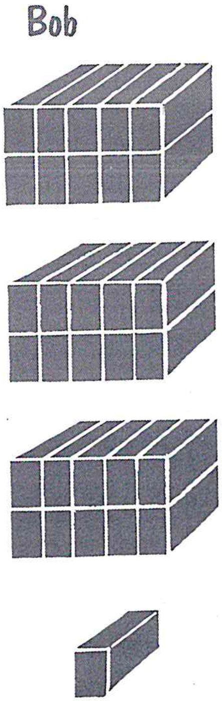


These children showed tens numbers in four different ways.

1. What number did Linda show on the peg board?
2. What number did Joe show with sticks?
3. What number did Bob show with tens blocks?
4. What number did Ann show with paper chains?
5. Make a peg board drawing. Show the number 32.
6. Draw sticks. Show the number 41.
7. Draw tens blocks to show 54.
8. Draw paper chains to show 40.
9. Read the numbers in problems 5–8. Tell which is the tens number and which is the ones number.
10. Use sticks to show the difference between the fours in 14 and 42.
11. Write the number that means:

7 tens	9 tens and 6 ones
2 tens and 1 one	3 tens and 9 ones
5 tens and 4 ones	6 tens and 9 ones



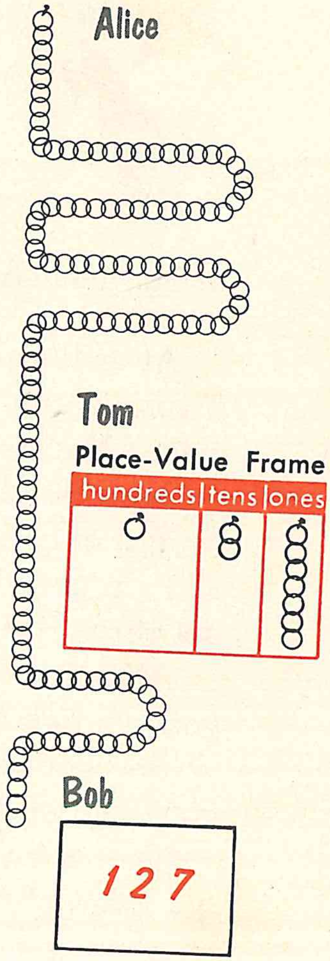


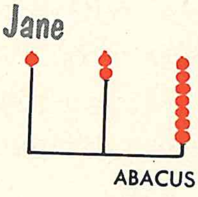
Other Ways of Showing What Numbers Mean

1. Alice made paper chains. She showed the number one hundred twenty-seven. Is her work right?
2. Tom showed this number another way. He hung paper rings on a place-value frame. What does one ring in hundreds place mean, or what is the value of one ring in hundreds place?
3. What is the value of one ring in tens place? How many rings did Tom put in tens place? Why?
4. What is the value of one ring in ones place? How many rings did Tom put in ones place? Why?
5. Bob wrote one hundred twenty-seven in figures. Now look at each child's work. Who showed 127 in the easiest way? Who showed every one in 127?
6. Draw place-value frames. Use figures. Write each of these numbers in a place-value frame:

   6 tens and 5 ones
   5 hundreds and 7 ones
   2 hundreds 4 tens and 1 one
   4 hundreds and 9 ones

7. Look at Jane's picture of an abacus. What number did she show? Draw an abacus like Jane's. Show 6 hundreds 5 tens and 7 ones.





Using Numbers to Answer Questions

At Bill's party the children played a fishing game. The children tried to win a prize. Each child got two turns at fishing.

John caught six fish the first time. He caught only four fish the second time.

Pam got eight fish the first time. She got three fish the second time.

Alice got four fish the first time. She got five fish the second time.

Bob got seven fish the first time. He got five fish the second time.

Tom got three fish the first time. He got five fish the second time.

Mary got five fish the first time. She got four fish the second time.

After all had two turns, Bill said, "The one with the most fish gets a prize. The one with the least number of fish gets a prize, too." Who won each prize?

If you have trouble finding the winners, the next page will help you.

Making Sure of the Winners

NAME	FIRST TIME		SECOND TIME		
John	6	and	4	=	10
Pam	?	and	?	=	?
Alice	?	and	?	=	?
Bob	?	and	?	=	?
Tom	?	and	?	=	?
Mary	?	and	?	=	?

1. Write the players' names on paper. Then write how many fish were caught each time.
2. Now write how many fish each player caught. You can write: John: 6 and 4 are 10. Or you can use a shorter way: John: 6 and 4 = 10. Both ways are read the same.
3. John was not sure that 10 was correct. Here is what he did. He wrote 1 for each fish he caught. Then he put all the ones together and counted them.

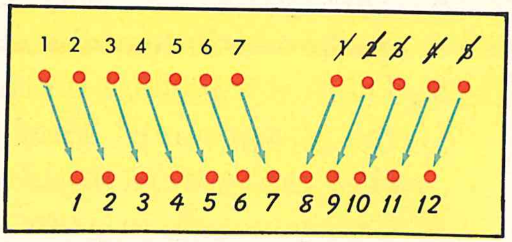
$$\underbrace{//////}_{6} \text{ and } \underbrace{////}_{4} = \underbrace{//////////}_{10}$$

Use John's way. Show how many fish Bob caught.

4. Bill asked Bob how many fish he caught. Bob said, "I caught seven and five."

   Bill said, "Put seven and five together. Then you will have to say only one number." What number will Bob then say? Use pieces of paper to show that your number is right.

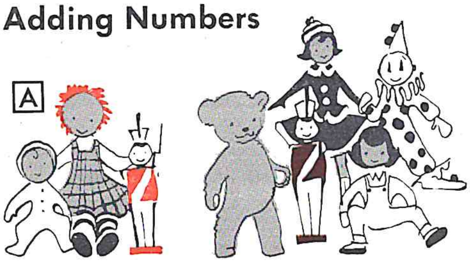
5. Joe made this dot drawing. He showed that 7 and 5 put together are twelve. Explain Joe's drawing.



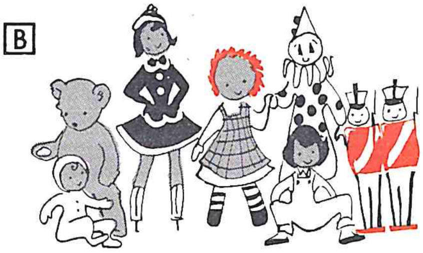
6. Make a drawing like Joe's. Show 5 and 4 put together.

Adding Numbers

A



B



1. How many groups does picture A show? How many dolls are there in each of these groups?
2. Picture B shows the groups put together. How many dolls are there in this new group?

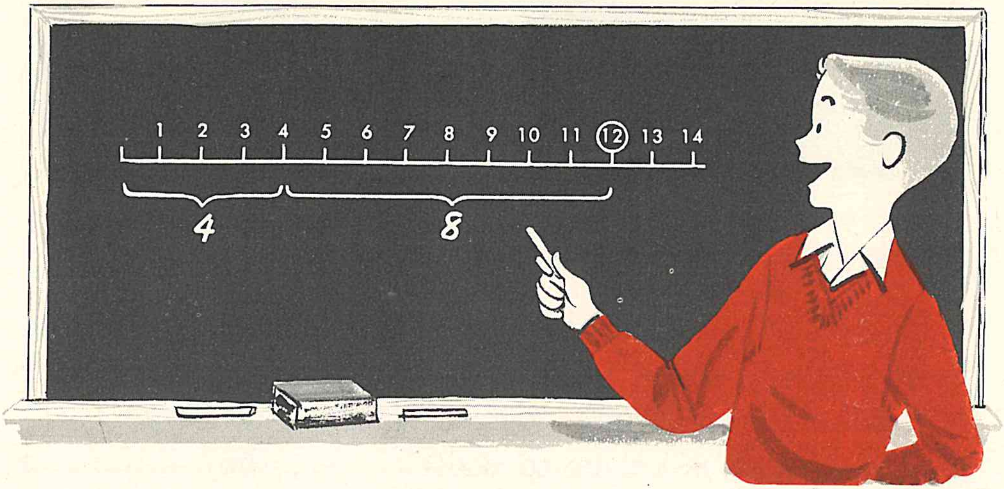
You can use marks, or strokes, to find how many are in the new group.

$\underbrace{///}_{3}$ and $\underbrace{/////}_{5}$ are $\underbrace{////////}_{\text{new group}}$

🟥 **When you put amounts together and find out how many are in the new group, you add. Adding is also called addition.**

Answer the questions asked below. Use marks, dots, or pictures to show that you added correctly.

3. Bill put 6 books on a shelf. The teacher gave him 3 other books to put there. How many books did he put on the shelf?
4. Nan had 6 dolls. May had 2 dolls. How many dolls did the two girls together have?
5. There were 5 boys on the steps. There were 8 boys on the playground. They all got together in one group. How many were in this group?
6. Can you tell in your own words what addition is? Begin, "Addition is . . ." and go on.



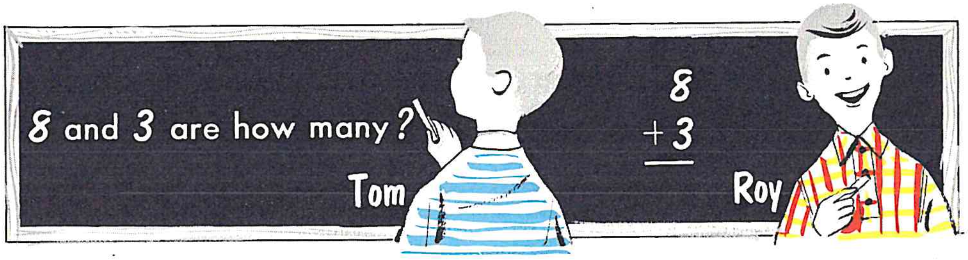
Adding Numbers on the Number Line

Sometimes Don uses a number line to add. First he draws a line. Next he marks it off into equal parts. Then he numbers the marks.

Look at the number line Don drew on the blackboard. What numbers did he add? What answer did he get?

Below are some number questions. They are addition number questions. That is, you must add to answer them. Draw number lines. Use them to answer these addition number questions.

1. How many are 3 and 3?
2. How many are 8 and 2?
3. How many are 6 and 5?
4. How many are 3 and 9?
5. How many are 4 and 4?
6. Six and 6 are how many?
7. Two and 9 are how many?
8. 3 and 5 are how many?
9. Use dot drawings. (See page 29.) Show that your answers to questions 1 through 8 are correct.



A Short Way to Write Addition Number Questions

1. Tom and Roy wrote the same addition number question. They used different ways. Who used numbers and words? Who used only numbers?
2. Which way is easier to write? Yes, the all-number way is easier. The numbers-and-words way takes longer.

- **In the all-number way, the sign + is called the plus sign. To read it, say "and" or "plus."**

3. Write the addition number questions. Use the all-number way.
   6 and 3 are how many?
   5 and 2 are how many?
   2 and 3 are how many?
   4 and 1 are how many?
   1 and 9 are how many?
   2 and 8 are how many?

All-number way with answer

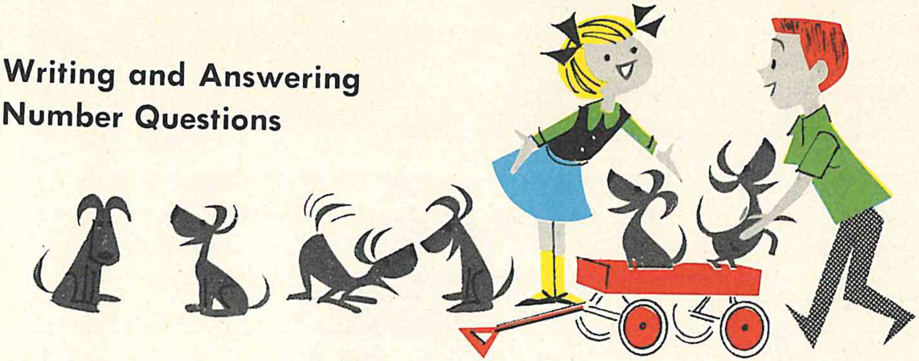
Betty

$$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$$

4. Write the answers to your all-number questions. Write them the way Betty has done.

- **The answer to an addition number question is called the sum. An addition number question and its sum together are called an addition fact.**

Writing and Answering Number Questions



1. These are Jim's puppies. Use the all-number way. Write a number question about the puppies.
2. Ann said, "Let me hold all the puppies together. How many puppies will I be holding?"

   Jim thought of the puppies in the wagon first. Read what he wrote. Ann thought of the puppies on the ground first. Read what she wrote.
3. How are Jim and Ann's number questions alike? How are the two number questions different?

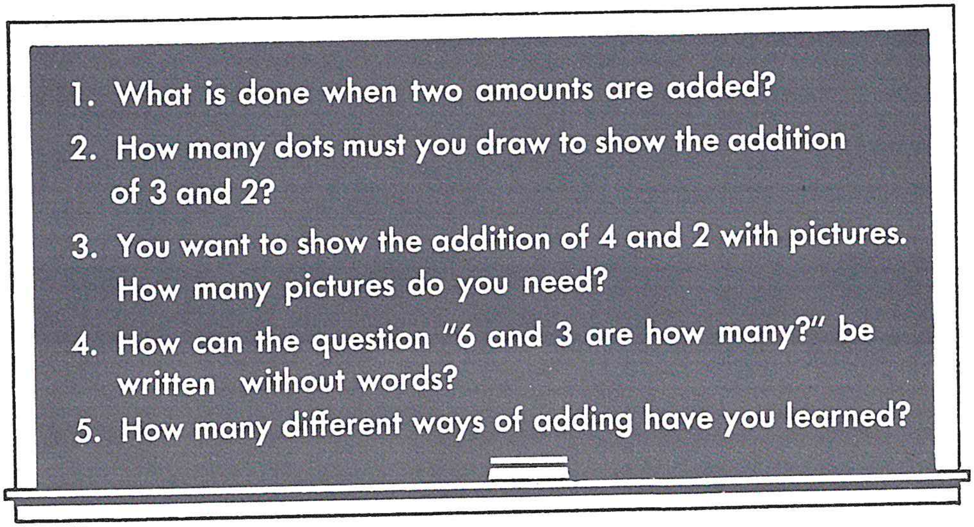
Jim $\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$

Ann $\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$

4. Write two number questions for each of these:

   6 dolls and 2 dolls
   5 cats and 6 cats
   2 hats and 5 hats
   3 balls and 4 balls
   2 toys and 7 toys
   8 dots and 4 dots
5. Write the answers to your number questions.
6. Write two number questions for each pair of numbers. Write answers to your number questions.

   8 and 1
   5 and 3
   3 and 2
   3 and 7
   4 and 6
   2 and 9
   5 and 7
   4 and 7



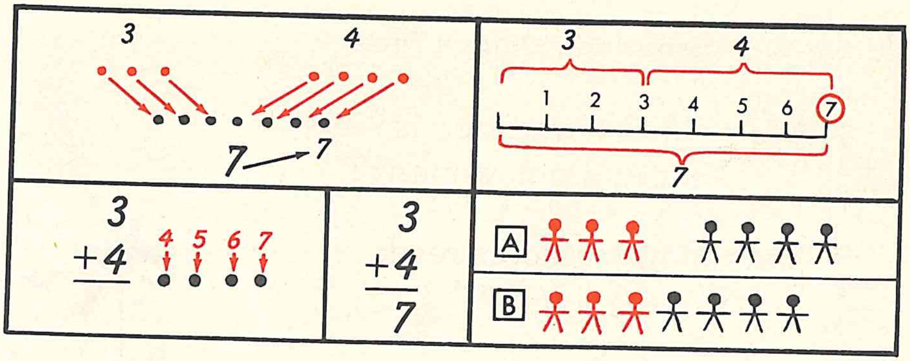
1. What is done when two amounts are added?
2. How many dots must you draw to show the addition of 3 and 2?
3. You want to show the addition of 4 and 2 with pictures. How many pictures do you need?
4. How can the question "6 and 3 are how many?" be written without words?
5. How many different ways of adding have you learned?

Some Questions About Addition

You have been studying addition. The questions here will help you review what you learned. Try to answer them. You may then want to ask other questions about addition. Your questions may help others, too.

1. The class thought Joe gave the best answer to the first question. Joe said, "You just put the amounts together in one group." Sue said, "If that is all you do, why add?" Try to answer Sue.
2. These answers were given for the last question. Which is the best way to add?

- You can add by using dots or pictures and counting.
- You can add by using the number line.
- You can add by using one number and counting out the other.
- You can add by just thinking the answer.



Using Different Ways to Add

1. Look at the additions above. What way of adding was used in each?

2. Find the answers to these number questions. Use dots and counting.

$$\begin{array}{r}7\\+2\\\hline\end{array}\quad\begin{array}{r}3\\+6\\\hline\end{array}\quad\begin{array}{r}4\\+2\\\hline\end{array}\quad\begin{array}{r}5\\+5\\\hline\end{array}\quad\begin{array}{r}3\\+7\\\hline\end{array}\quad\begin{array}{r}5\\+1\\\hline\end{array}$$

3. Find the answers to these number questions. Use the number line.

$$\begin{array}{r}5\\+3\\\hline\end{array}\quad\begin{array}{r}2\\+3\\\hline\end{array}\quad\begin{array}{r}8\\+2\\\hline\end{array}\quad\begin{array}{r}6\\+4\\\hline\end{array}\quad\begin{array}{r}2\\+5\\\hline\end{array}\quad\begin{array}{r}2\\+2\\\hline\end{array}$$

4. Find the answers to these number questions. Use one number and count out the other number.

$$\begin{array}{r}4\\+3\\\hline\end{array}\quad\begin{array}{r}4\\+6\\\hline\end{array}\quad\begin{array}{r}4\\+4\\\hline\end{array}\quad\begin{array}{r}2\\+4\\\hline\end{array}\quad\begin{array}{r}3\\+3\\\hline\end{array}\quad\begin{array}{r}1\\+7\\\hline\end{array}$$

5. Think. Then write the answers to these number questions.

$$\begin{array}{r}2\\+6\\\hline\end{array}\quad\begin{array}{r}3\\+2\\\hline\end{array}\quad\begin{array}{r}5\\+4\\\hline\end{array}\quad\begin{array}{r}7\\+3\\\hline\end{array}\quad\begin{array}{r}3\\+5\\\hline\end{array}\quad\begin{array}{r}9\\+1\\\hline\end{array}$$

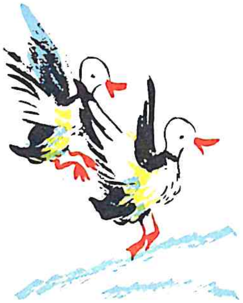
6. Which way of adding is quickest?

Addition Questions and Addition Facts

$\begin{array}{r}6\\+3\\\hline\end{array}$ This addition question is read:
"6 and 3 are how many?"

$\begin{array}{r}6\\+3\\\hline 9\end{array}$ This addition fact is read:
"6 and 3 equal 9."

■ **Equal means "are" or "are the same as."**



1. Look at the ducks on this page. Ask an addition question about them. Answer your addition question.
2. Read these addition questions. Answer them.

$$\begin{array}{r}3\\+4\\\hline\end{array}\quad\begin{array}{r}7\\+2\\\hline\end{array}\quad\begin{array}{r}6\\+2\\\hline\end{array}\quad\begin{array}{r}4\\+5\\\hline\end{array}\quad\begin{array}{r}3\\+2\\\hline\end{array}\quad\begin{array}{r}9\\+1\\\hline\end{array}\quad\begin{array}{r}1\\+8\\\hline\end{array}\quad\begin{array}{r}5\\+4\\\hline\end{array}$$

3. Read these addition facts. Learn them.

$$\begin{array}{r}6\\+1\\\hline 7\end{array}\quad\begin{array}{r}3\\+2\\\hline 5\end{array}\quad\begin{array}{r}3\\+1\\\hline 4\end{array}\quad\begin{array}{r}1\\+6\\\hline 7\end{array}\quad\begin{array}{r}6\\+3\\\hline 9\end{array}\quad\begin{array}{r}3\\+5\\\hline 8\end{array}\quad\begin{array}{r}1\\+9\\\hline 10\end{array}\quad\begin{array}{r}1\\+1\\\hline 2\end{array}$$

4. Have someone read the addition questions only. See if you can write the sums. Study any that you miss.

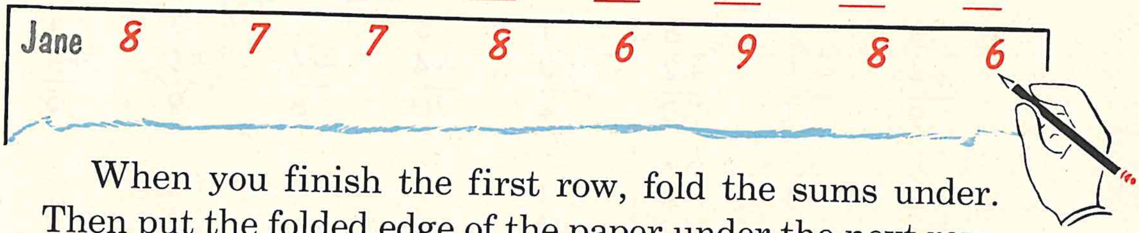
$$\begin{array}{r}1\\+8\\\hline 9\end{array}\quad\begin{array}{r}5\\+5\\\hline 10\end{array}\quad\begin{array}{r}7\\+1\\\hline 8\end{array}\quad\begin{array}{r}2\\+8\\\hline 10\end{array}\quad\begin{array}{r}1\\+5\\\hline 6\end{array}\quad\begin{array}{r}2\\+7\\\hline 9\end{array}$$

■ **An addition fact is an addition question and its answer, together.**

A Way to Save Time

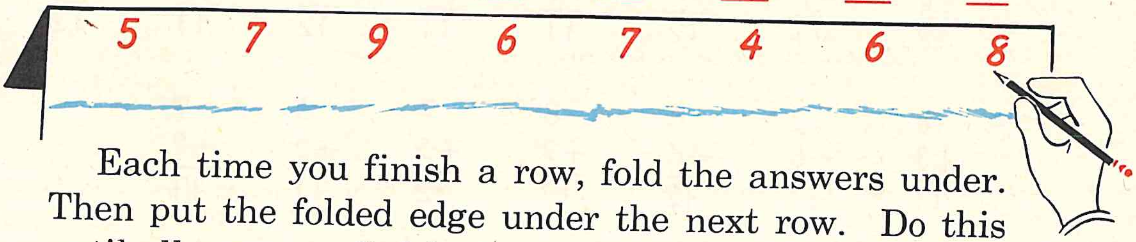
Use this quick way. Do not copy the addition question. Instead, put your paper under the row of questions. Write only the sums on your paper.

1.	4	2	4	6	2	7	2	5
	+4	+5	+3	+2	+4	+2	+6	+1



When you finish the first row, fold the sums under. Then put the folded edge of the paper under the next row. Write only the sums.

2.	2	5	4	4	3	2	3	5
	+3	+2	+5	+2	+4	+2	+3	+3



Each time you finish a row, fold the answers under. Then put the folded edge under the next row. Do this until all rows are finished.

3.	5	1	2	7	2	1	3
	+5	+5	+8	+1	+7	+6	+5

4. Did you write the answers to row 3 quickly? Jane took a long time to write the answers for rows 1 and 2. Think of a good reason why Jane and you should learn to write sums quickly.

Learn Your Addition Facts Well

To answer addition number questions quickly, you must know the addition facts well.

Read these facts. Some may seem hard. Say these over and over again. Then try to write them without looking at this page. Can you write them correctly?

1. $\begin{array}{rrrrrrrr} 5 & 2 & 8 & 1 & 6 & 1 & 3 & 1 \\ +4 & +1 & +2 & +3 & +4 & +7 & +6 & +4 \\ \hline 9 & 3 & 10 & 4 & 10 & 8 & 9 & 5 \end{array}$

2. $\begin{array}{rrrrrrr} 4 & 3 & 4 & 1 & 7 & 9 & 8 \\ +6 & +7 & +1 & +2 & +3 & +1 & +1 \\ \hline 10 & 10 & 5 & 3 & 10 & 10 & 9 \end{array}$

3. $\begin{array}{rrrrrrrr} 4 & 4 & 5 & 2 & 7 & 8 & 3 & 9 \\ +8 & +7 & +7 & +9 & +4 & +4 & +8 & +3 \\ \hline 12 & 11 & 12 & 11 & 11 & 12 & 11 & 12 \end{array}$

4. $\begin{array}{rrrrrrr} 8 & 5 & 6 & 3 & 7 & 6 & 9 \\ +3 & +6 & +6 & +9 & +5 & +5 & +2 \\ \hline 11 & 11 & 12 & 12 & 12 & 11 & 11 \end{array}$

5. Use folded paper. Write the sums for the facts above. Then see if your sums are right.

This may help you learn the facts you missed. Read the fact. Close your eyes. Think the fact several times. Try to see a clear picture of the fact. Open your eyes. Does the fact look as you thought it did? If not, try again to learn it.

Answering Number Questions Quickly

Use folded paper. Write the answers quickly.

1.	3	2	2	3	5	1	4	2	4
	+5	+3	+1	+7	+1	+2	+6	+8	+2
2.	3	2	6	1	3	6	2	5	1
	+4	+2	+2	+1	+2	+1	+4	+2	+4
3.	4	1	4	6	3	1	9	2	3
	+5	+3	+4	+4	+6	+5	+1	+7	+3
4.	1	5	2	7	1	6	8	1	7
	+7	+3	+5	+1	+9	+3	+2	+8	+3
5.	5	3	5	1	7	4	2	8	4
	+5	+1	+4	+6	+2	+1	+6	+1	+3

Here are some ways to help you learn better. Which ways do you like best?

How to Study Addition Facts

- Say a fact over and over. Then write it down. Find out if you wrote it correctly.
- Write number questions. Then give the sums.
- Draw dot pictures to show facts.
- Show facts on a number line.
- Write the sums for a page of number questions.

Answers Only!

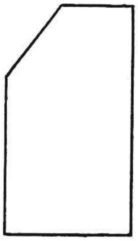
Have someone read the number questions at the top of the page. The class will write answers only.

Make a Set of Helper Cards

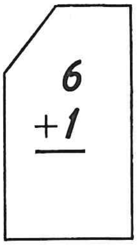
Make cards of stiff paper or thin cardboard. Cut off a corner. Picture A will help you. Make sixty cards because you have studied sixty addition facts.

On the front of the card write a number question. On the back write the number fact. You will find two rows of facts on page 36. Two rows are on page 37. The rest of the sixty facts are on page 38.

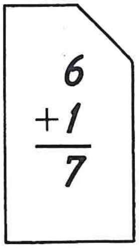
A



Front

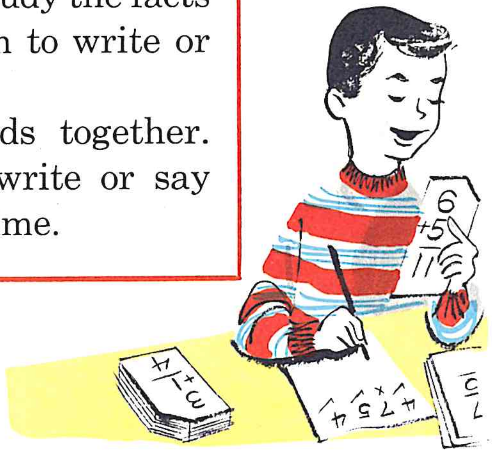


Back



How to Use Helper Cards

- Stack the cards. Have cut-off corners at the left. Read a number question. Write or say the sum.
- Turn the card over. Is your answer right?
- Make a "right answer stack" and a "wrong answer stack." Study the facts you got wrong. Try again to write or say the sums.
- Then put all helper cards together. Mix them well. Try to write or say every sum correctly this time.

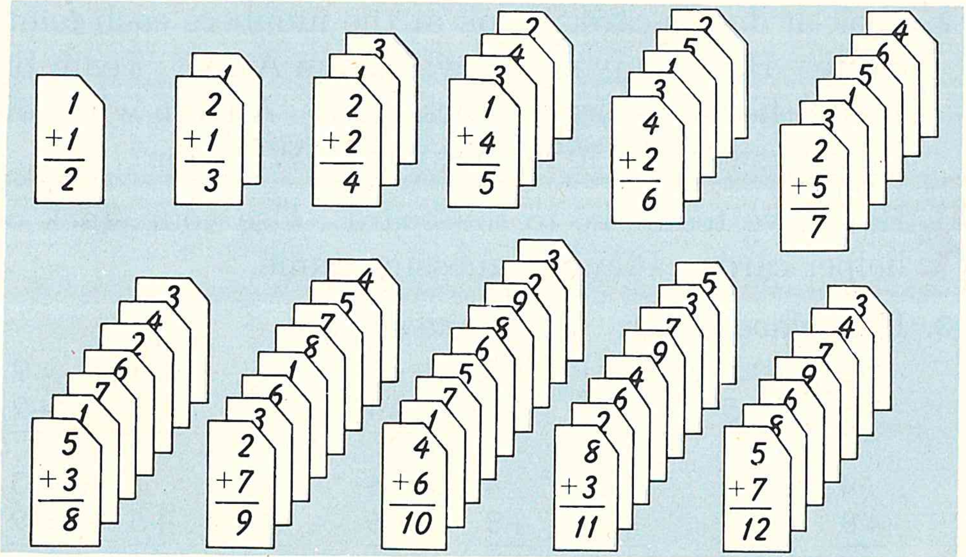


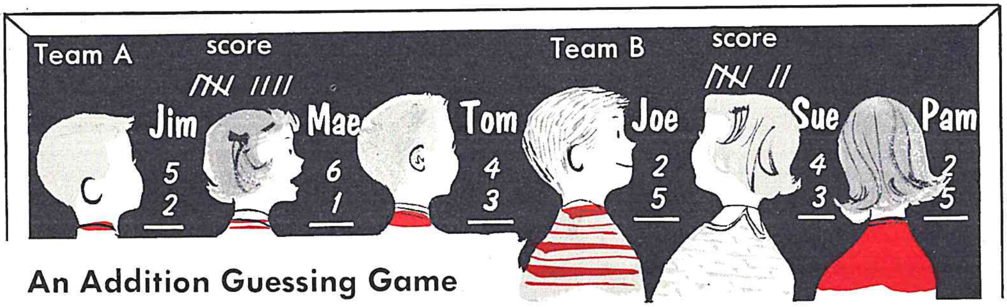
Games with Helper Cards

A game for two: Jack shows Sue a number question. Sue gives the sum. If it is right, Sue gets the card. If Sue misses, Jack shows her the back of the card. She reads and studies the fact. Jack then puts the card back in his stack. After Sue says all sums correctly, she will have all the cards. Then Sue will have Jack give the sums.

Another game with helper cards: Play alone or with a friend. Make stacks of your helper cards. In the first stack put facts with a sum of 2. In the next stack put all facts with a sum of 3. Make stacks for sums of 4, 5, 6, 7, 8, 9, 10, 11, and 12. Then learn what facts are in each stack.

Without peeking, write the facts for each stack. When you finish, use the stack to check your work.

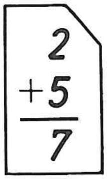




An Addition Guessing Game

1. Name the players on Team A. On Team B. Look at the scores the teams have made. A mark like this / means 1, or one right answer. What do marks like these 𝍸 mean? What score has Team A made? Team B? Which team is ahead?

Here is the guessing game they are playing. Jack picks a helper card. He says, "I am looking at an addition fact. The sum is 7. Guess the other two numbers. You can write either number first."



Jack's Helper Card

2. Look at Jack's card. Look at the numbers each team wrote. How many marks will Team A get? Team B? Write the new score for each team. A team with ten right answers, or 10 marks, wins. Who won?

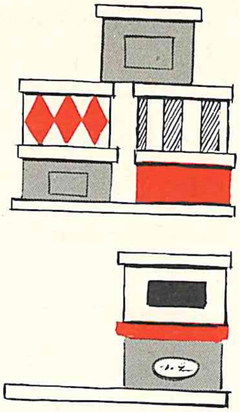
Have two teams go to the board. Use your stack of helper cards. Play the guessing game.

3. Use folded paper. Write the sums.

$$\begin{array}{rrrrrrrr} 5 & 7 & 8 & 9 & 7 & 5 & 6 & 9 \\ +6 & +5 & +3 & +3 & +4 & +7 & +5 & +2 \\ \hline \end{array}$$

$$\begin{array}{rrrrrrrr} 4 & 4 & 2 & 4 & 6 & 3 & 5 & 3 \\ +8 & +7 & +9 & +8 & +6 & +8 & +5 & +9 \\ \hline \end{array}$$

Finding Answers to Problems

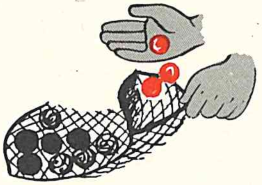


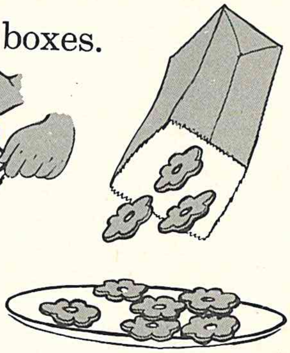
■ **A problem gives facts and asks a question about them. Finding the answer is called solving the problem.**

1. Ann put 5 boxes on the top shelf. She put 2 boxes on the bottom shelf. Together she put away how many boxes?

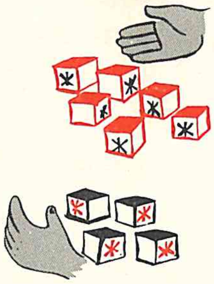
Look at the ways these children solved the problem:

- Bob counted the boxes: one, two, three, four, five, six, seven. He said, "Ann put away seven boxes."
- Tom made dots: ● ● ● ● ● + ● ● = ● ● ● ● ● ● ●
- Ann drew squares: ■ ■ ■ ■ ■ + ■ ■ = ■ ■ ■ ■ ■ ■ ■
- Dale used marks: 𝍸 + || = 𝍸 ||
- Pam wrote: 5 boxes and 2 boxes are 7 boxes.
- Don wrote: 5 + 2 = 7
- Jack wrote: $\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$





2. Who used the shortest way? Who used a picture way? Which two ways used all numbers?
3. Look at the pictures. Write a word problem about Joe's marbles. About Sue's cookies. About the blocks.
4. Use a picture way. Solve the problems you wrote. Solve them again. Use a number way.



Solving Problems

Look at the way Pam solved her problem on page 43. Use her way and solve these problems. Then use a picture way to show that your answer is right.

1. Bob had 6 chicks. Father had 5 chicks. How many did they have together?
2. Tom had 2 rabbits. He bought 9 rabbits. In all he had how many rabbits?
3. Jane had 3 dolls. Mother gave her 2 more. How many dolls did Jane have in all?
4. Jerry had 7 pennies. He earned 5 pennies. Together he had how many pennies?
5. Tom had 5 cookies. Jane had 4 cookies. How many cookies did they have together?
6. Jim had 4 marbles in his hand. He had 8 marbles in his pocket. How many did he have in all?
7. Bob dried 5 plates. Sue dried 5 plates. Together they dried how many plates?
8. Pam peeled 8 potatoes. Bob peeled 3 potatoes. How many potatoes did they peel together?
9. You used these number facts to solve the problems above. Read a fact. Then read to the class the problem the fact solves.

$8 + 3 = 11$ $6 + 5 = 11$ $3 + 2 = 5$ $4 + 8 = 12$

$5 + 5 = 10$ $5 + 4 = 9$ $2 + 9 = 11$ $7 + 5 = 12$

Getting a Clear Picture of Addition Facts

Read each hint and then quickly find the sums.

Adding 1 to a number means 1 more. The sum is the next higher number.

1.	3	8	6	5	1	1	1	1	1
	+1	+1	+1	+1	+1	+9	+2	+4	+7

Adding 2's is like counting by 2's. You skip the next higher number to find the sum.

2.	3	2	6	9	7	4	1	5	8
	+2	+2	+2	+2	+2	+2	+2	+2	+2
3.	2	2	2	2	2	2	2	2	2
	+3	+2	+6	+9	+7	+4	+1	+5	+8

In doubles the two numbers you add are the same. When you know the doubles, near doubles are easy.

4.	1	1	2	2	2	3	3	3	4
	+1	+2	+1	+2	+3	+2	+3	+4	+3
	4	4	5	5	5	6			
	+4	+5	+4	+5	+6	+5			

Use helper cards. Study the facts for these number questions. Add.

5.	5	3	8	7	3	5	7	4	6
	+3	+9	+3	+5	+7	+7	+4	+8	+3
6.	7	4	6	3	9	3	3	8	4
	+3	+7	+4	+6	+3	+5	+8	+4	+6

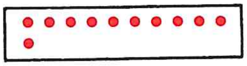
How Well Have You Learned?

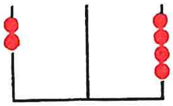
Right answers turn the pointer on the dial. Try to turn the pointer as far as you can. If it goes far to the right, you know your work very well. If it does not go very far, you need more study.

The numbers in red show the pages where the work was taught.

Write neatly in figures.

1. The odd numbers between 80 and 90. (21, 23)
2. The even numbers from 30 through 40. (22, 23)
3. The number of tens in ninety-five. (24–26)
4. The number shown below. (24–26)





5. The number shown on this abacus. (27)
6. The number four hundreds and five tens. (27)
7. Eighty-one; thirty-six; fifty; twelve. (24–26)

Do what is asked in these exercises.

8. Use a dot drawing. Add 5 and 3. (29, 35)
9. Use a number line. Show $5 + 2 = 7$. (31, 35)
10. Use counting. Find the answer for $4 + 3$. (29, 35)
11. Use numbers. Write, "6 and 4 are how many?" (32)

12. Use folded paper. Write the sums. (35, 38)

$\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ +8 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$

Helping Yourself

1. The teacher will show the right answers for the exercises on page 46. Check your work.
2. Count your right answers. Where did you turn the pointer on your dial? How much study do you need?
3. If you made mistakes, you can help yourself. Begin by studying pages that will help you. The red figures given after each exercise show where to find helping pages. Study the pages you need. Ask for help if you do not understand something.
4. Do this if you missed any sums. Turn to page 39. Choose one or two ways to study facts. Use these ways. Study the facts on pages 36, 37, and 38. Then use folded paper. Write the sums for additions on pages 38, 39, and 45.
5. How well did you write your figures? Page 2 shows how good figures are written. Practice writing figures until you improve.

Try these review questions:

6. What is the answer to an addition question called?
7. What is the difference between an addition question and an addition fact?
8. Finish the sentence, "Addition is . . ."
9. Draw a place-value frame. How is 245 written in the frame?
10. Show the number 316 in a place-value frame.

How Well Are You Doing?

Use folded paper. Write the sums. Check answers.

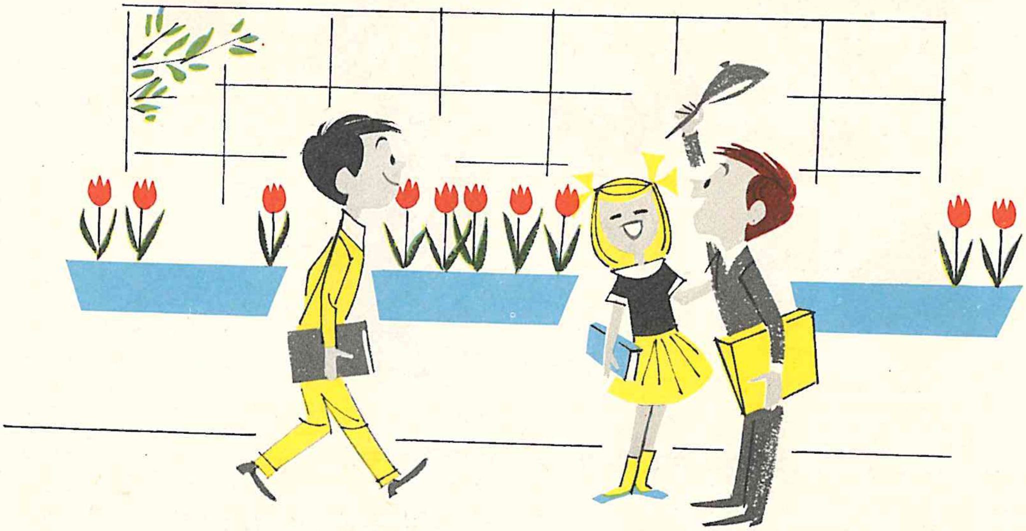
1.	2	1	4	2	3	2	4	5	1
	+8	+5	+5	+2	+3	+7	+3	+4	+7
2.	4	2	3	1	4	5	1	6	3
	+4	+3	+7	+1	+2	+3	+4	+2	+6
3.	1	7	5	3	1	3	2	9	7
	+6	+3	+1	+2	+9	+4	+1	+1	+2
4.	7	2	6	4	2	6	1	3	8
	+1	+4	+1	+6	+6	+4	+3	+5	+1
5.	5	3	1	8	4	2	1	5	6
	+2	+1	+2	+2	+1	+5	+8	+5	+3

Use folded paper. Write the sums. Check answers.

6.	4	2	4	3	5	3	8	5
	+8	+9	+7	+9	+6	+8	+4	+7
7.	6	7	6	9	7	8	9	
	+6	+4	+5	+3	+5	+3	+2	

8. Bob had **8** toy trucks. Joe had **2** trucks. How many trucks did they have in all?

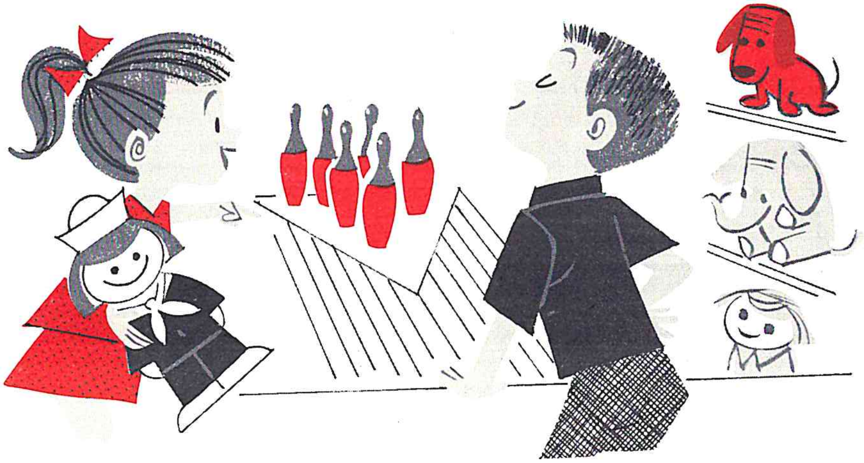
9. Draw a square like this □ for each truck in problem 8. Do the squares show that you answered problem 8 correctly?



A New Kind of Number Question

1. These children planted flower bulbs. Some bulbs did not come up. They planted 8 bulbs in the middle box. How many did not come up? Make a drawing to show that your answer is correct.
2. They planted 6 bulbs in the box at the left. How many of these did not come up? Make a drawing.
3. Seven bulbs were planted in the box at the right. How many did not come up? Make a drawing.
4. For the middle box Bill asked, "5 from 8 is how many?" Is that the right number question to ask?
5. Ask a number question like Bill's for the box at the left. For the box at the right.

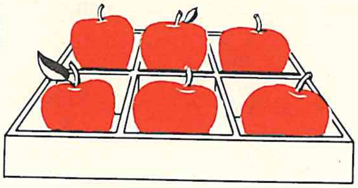
■ **A number question like "5 from 8 is how many?" is called a subtraction number question.**



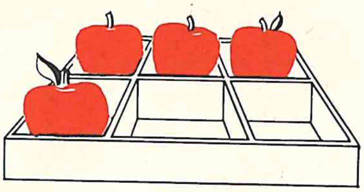
Answering Subtraction Number Questions

1. Don and Ann are at a picnic. They are playing "Ten Pins." How many pins are standing? How many pins were standing before Don rolled his ball?
2. How many pins did Don knock off the stand? Write the subtraction number question. Write the answer. Use a drawing if you think it will help.
3. After Ann rolled the ball, 3 pins were standing. How many pins did she knock over?
4. Ann had 9 cookies. After she ate some, she had 7 left. How many cookies did she eat?
5. Four from 7 is how much?
6. Three from 4 is how much?
7. To answer question 6 above, Don drew dots. He crossed out 3 dots like this: $\overset{1}{\bullet} \quad \overset{2}{\times} \quad \overset{3}{\times} \quad \overset{4}{\times}$ Did his drawing show that 3 from 4 leaves 1?
8. Draw 9 dots. Cross out dots to show how many are left when 5 is taken from 9.

A



B



Subtracting Numbers

1. Picture A shows a box of apples. Picture B shows the box after some apples were taken away. What amount or number of apples was taken away?

🟥 **When you take one amount from another, you subtract**

2. There were 8 plates in a stack. Mary used 2 of the plates. How many plates were not used?

To find how many were not used Mary said, “2 from 8 is how many?” Look at the way the teacher wrote Mary’s number question on the board. How do you think Mary read the sign –?

Mary's Number Question

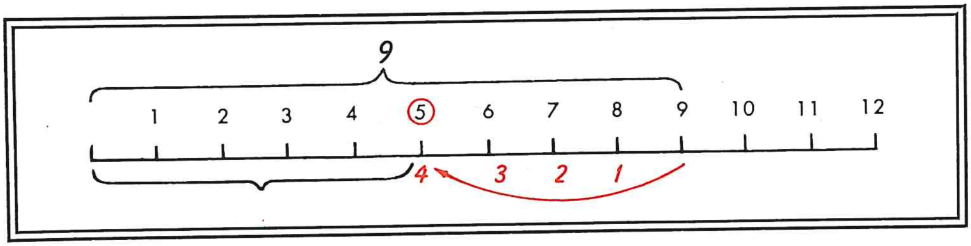
$$\begin{array}{r}8\\-2\\\hline\end{array}$$

There are different ways to read a subtraction question written with numbers. For Mary’s question you can say:

2 from 8 is how many?
8 take away 2 is how many?
8 minus 2 is how many?

3. Read each of these number questions in three different ways.

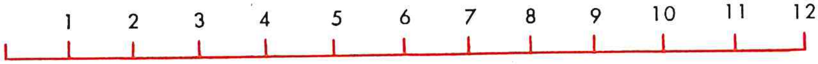
$$\begin{array}{r}6\\-2\\\hline\end{array}\qquad\begin{array}{r}7\\-4\\\hline\end{array}\qquad\begin{array}{r}8\\-7\\\hline\end{array}\qquad\begin{array}{r}4\\-2\\\hline\end{array}\qquad\begin{array}{r}3\\-2\\\hline\end{array}\qquad\begin{array}{r}10\\-5\\\hline\end{array}$$



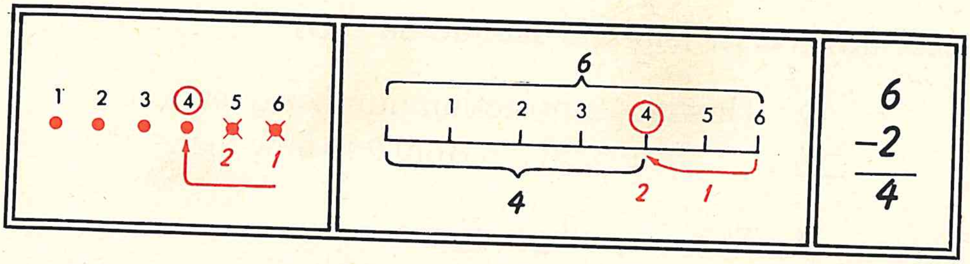
Subtracting Numbers on the Number Line

1. The number line above shows 4 subtracted from 9. What is the answer?

Draw number lines like the one below. Use them to answer the subtraction questions in examples 2 through 7.



2. Three from 5 is how many?
3. Six from 8 is how many?
4. Five take away 2 is how many?
5. Nine minus 7 is how many?
6. Ten minus 4 is how many?
7. Eight take away 3 is how many?
8. Use numbers. Write the subtraction questions for examples 2 through 7. Begin: $\begin{array}{r}5\\ \underline{-3}\end{array}$. Then write the answers to your subtraction questions.
9. Ted showed that his answer to example 2 was correct. He drew 5 dots. He put crosses on 3 of the dots like this: ● ● ⊗ ⊗ ⊗ How many dots had no crosses?
10. Use dots. Show that your answers for examples 5, 6, and 7 are correct.



Different Ways to Subtract

1. Look at the drawings above. What three ways of subtracting do they show?

Find answers to these subtraction questions. Use dots. Cross out the dots to be subtracted. Count the dots that are left.

2.

$$\begin{array}{rrrrrrrr} 8 & 4 & 6 & 5 & 9 & 3 & 10 & 3 \\ -3 & -1 & -4 & -4 & -3 & -2 & -7 & -1 \\ \hline \end{array}$$

Answer these number questions. Use the number line.

3.

$$\begin{array}{rrrrrrrr} 9 & 7 & 9 & 7 & 6 & 10 & 9 & 10 \\ -6 & -6 & -8 & -5 & -5 & -2 & -1 & -8 \\ \hline \end{array}$$

Think. Then write answers to these number questions.

4.

$$\begin{array}{rrrrrrrr} 2 & 7 & 9 & 7 & 10 & 5 & 9 & 7 \\ -1 & -3 & -7 & -1 & -4 & -2 & -1 & -3 \\ \hline \end{array}$$

5. Which way of subtracting is quickest?

■ **In subtraction you find the difference between two numbers. That is why the answer to a subtraction number question is sometimes called the difference.**

Subtraction Questions and Subtraction Facts

$$\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$$

This is a subtraction number question.
It is read: "8 from 9 is how many?"

$$\begin{array}{r} 9 \\ -8 \\ \hline 1 \end{array}$$

This is a subtraction fact.
It is read: "8 from 9 is 1."

Read. Then answer these number questions.

1.	6	10	8	10	7	8	4	10
	−1	−5	−2	−9	−4	−1	−2	−1

Read these subtraction facts.

2.	8	5	7	9	6	10	10	7	5
	−6	−1	−5	−3	−4	−5	−3	−6	−3
	2	4	2	6	2	5	7	1	2

■ **A subtraction fact is a subtraction number question and its answer, together.**

▶ Use folded paper. Write the answers as quickly as you can. Your teacher will tell you when to start and when to stop.

3.	9	6	4	6	9	8	4	5	10
	−7	−5	−2	−3	−1	−4	−3	−2	−9
	2	1	2	3	8	4	1	3	1
4.	8	9	10	9	10	8	7	10	6
	−2	−4	−2	−8	−6	−3	−1	−8	−1
	6	5	8	1	4	5	6	2	5

Make a subtraction helper card for each subtraction fact in rows 2, 3, and 4. Now you have twenty-seven helper cards. Study them the way you learned addition facts on page 40. Play the game that Jack and Sue are playing on page 41.

Use folded paper. Write the answers as quickly as you can. Your teacher will tell you when to start and when to stop.

5. $\begin{array}{r}4\\-1\\\hline 3\end{array}$ $\begin{array}{r}8\\-5\\\hline 3\end{array}$ $\begin{array}{r}3\\-2\\\hline 1\end{array}$ $\begin{array}{r}7\\-3\\\hline 4\end{array}$ $\begin{array}{r}8\\-7\\\hline 1\end{array}$ $\begin{array}{r}6\\-2\\\hline 4\end{array}$ $\begin{array}{r}9\\-2\\\hline 7\end{array}$ $\begin{array}{r}8\\-1\\\hline 7\end{array}$ $\begin{array}{r}10\\-4\\\hline 6\end{array}$

6. $\begin{array}{r}5\\-4\\\hline 1\end{array}$ $\begin{array}{r}9\\-6\\\hline 3\end{array}$ $\begin{array}{r}7\\-4\\\hline 3\end{array}$ $\begin{array}{r}3\\-1\\\hline 2\end{array}$ $\begin{array}{r}9\\-5\\\hline 4\end{array}$ $\begin{array}{r}10\\-7\\\hline 3\end{array}$ $\begin{array}{r}2\\-1\\\hline 1\end{array}$ $\begin{array}{r}7\\-2\\\hline 5\end{array}$ $\begin{array}{r}10\\-1\\\hline 9\end{array}$

Make a subtraction helper card for each fact in rows 5 and 6. You will then have forty-five subtraction helper cards. Play the game for two (page 41) again.

How to Study Subtraction Facts

- Say the subtraction fact over and over. For $\begin{array}{r}7\\-3\\\hline 4\end{array}$ say, "3 from 7 is 4, 3 from 7 is 4." Close your eyes. Have you a clear picture of the fact? Write the fact. Did you write it correctly?
- Write subtraction number questions. Then write the answers. See if you got them right.
- Show subtraction facts on the number line.
- Work with a partner. Study your helper cards.

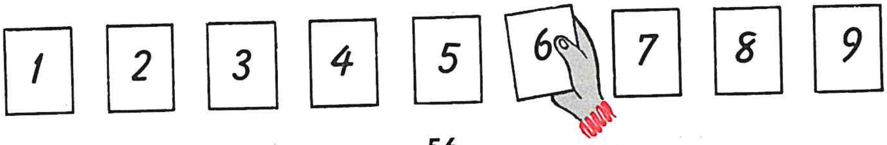
Do You Know Your Subtraction Facts Well?

You can soon find out how well you know your subtraction facts. Use folded paper. Write the answers to the subtraction number questions.

1.	6 −3	9 −8	7 −3	9 −2	5 −1	10 −2	4 −3	8 −2	10 −8
2.	7 −4	10 −6	6 −2	9 −3	8 −1	4 −2	7 −2	10 −5	9 −7
3.	9 −4	6 −5	5 −3	10 −1	7 −5	4 −1	8 −3	6 −1	10 −9
4.	8 −7	3 −1	9 −5	8 −4	5 −2	6 −4	8 −5	10 −3	7 −1
5.	5 −4	7 −6	10 −4	9 −1	2 −1	8 −6	10 −7	9 −6	3 −2

Check answers. Write the subtraction fact for each subtraction you missed. Now you know that these facts need more study. Page 55 tells you how to study them.

Let's play "Flash." Put 9 pieces of paper on your desk. Number as shown below. Now watch! Flash! The teacher holds up a subtraction helper card. Then she hides it. Flash! Hold up the paper that shows the right answer. Check! Look around. Has everyone the right answer? Watch for the next flash!



Choosing the Right Number Question

1. Tom is 9 years old. His sister is 7 years old. How much older is Tom? Write the number question for this problem.

2. Look at the number questions Ann and Don wrote. Which is right? Use a number line to check your answer.

$$\begin{array}{cc} \text{Ann} & \text{Don} \\ 9 & 9 \\ -7 & +7 \\ \hline \end{array}$$

Write the number questions for problems 3 through 6.

3. Jack read 5 pages. Sue read 8 pages. Sue read how many more pages than Jack did?
4. Jane had 7 pictures in one hand. She had 3 pictures in the other. How many pictures did she have?
5. Bob had 6 cookies in a bag. He had 5 cookies in his hand. How many cookies did he have?
6. There are 8 books on the first shelf. There are 4 books on the second shelf. The first shelf has how many more books than the second?

Answers Only!

Listen carefully as your teacher reads these number questions. Some are addition questions. Some are subtraction questions. Think! Then write the answer.

7.

$$\begin{array}{rrrrrrrr} 6 & 8 & 5 & 8 & 7 & 5 & 9 & 4 \\ -4 & -3 & +2 & +2 & -4 & +5 & -6 & -2 \\ \hline \end{array}$$

8.

$$\begin{array}{rrrrrrrr} 5 & 4 & 5 & 8 & 6 & 9 & 4 & 8 \\ -2 & +6 & +3 & -1 & -3 & -2 & +4 & -6 \\ \hline \end{array}$$

Finding the Difference

Some problems ask questions like "How many more?" and "How many less?" and "How many fewer?" You find the answer by finding the difference between two amounts.

🟥 **To find how many more or how many fewer, you subtract. Your answer is called the difference.**

1. Tom's team won 9 games. Jack's team won 6 games. Tom's team won how many more than Jack's?
2. Joe sold 10 tickets. Bob sold 4 tickets. How many more tickets did Joe sell than Bob did?
3. Mother wrote 8 letters. Joan wrote 2 letters. Mother wrote how many more than Joan did?
4. Jerry earned 10 pennies. Sue earned 5 pennies. Sue earned how many pennies less than Jerry?
5. Ann made 7 sandwiches. Pat made 3 sandwiches. Pat made how many fewer than Ann?
6. There are 9 children working at a big table. There are 4 children working at a small table. How many more children are working at the large table than at the small one?
7. Joe has 7 sheets of paper. Jane has 5 sheets of paper. How many fewer sheets has Jane?
8. Bill has 10 pencils. Bob has 3 pencils. How many more pencils has Bill than Bob has?
9. Jack has 10 sticks of candy. Sally has 6 sticks. Jack has how many more sticks than Sally has?

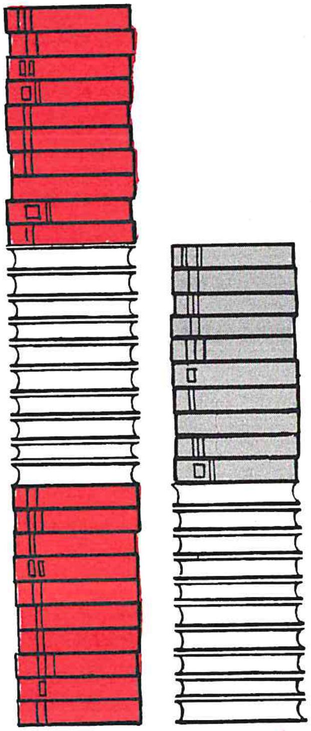
Another Way to Solve Word Problems

You can solve word problems by doing what the problem says. That is, you can act out the things the problem tells you. Play that you are actors. Act out these problems. Tom and Sally are acting problem 1.

1. Sally had 4 books. Tom gave her 3 more. How many books did Sally have in all?
2. Dale gave 6 pencils to Mary. Sue gave Mary 4 more. How many pencils did Mary then have?
3. Bob had 6 sheets of paper. Sue had 10 sheets of paper. Sue had how many more sheets than Bob?
4. Ann wrote 6 addition facts on the board. Jim wrote 9 addition facts on the board. Jim wrote how many more addition facts than Ann?
5. The teacher sent 5 boys to the board. Then she sent 4 more. How many boys were at the board?
6. Pat drew 5 marks on the board. Sue then drew 3 marks. How many marks were there in all?
7. I found 9 paper clips in a box and 3 on the desk. How many paper clips did I find in all?
8. Read any problem above to the class. Then read the number question below that is used in solving the problem.

$$\begin{array}{r}9\\-6\\\hline\end{array}\qquad\begin{array}{r}4\\+3\\\hline\end{array}\qquad\begin{array}{r}9\\+3\\\hline\end{array}\qquad\begin{array}{r}5\\+4\\\hline\end{array}\qquad\begin{array}{r}10\\-6\\\hline\end{array}\qquad\begin{array}{r}5\\+3\\\hline\end{array}\qquad\begin{array}{r}6\\+4\\\hline\end{array}$$

Adding Tens and Hundreds



1. The books in the picture are stacked by tens. How many books are in the first stack? In the second stack? How many are there in the two stacks together?

2. Ann and Tom wrote these number questions for problem 1:

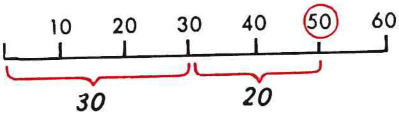
Ann
$$\begin{array}{r}3 \text{ tens}\\ +2 \text{ tens}\\ \hline\end{array}$$

Tom
$$\begin{array}{r}30\\ +20\\ \hline\end{array}$$

What is the answer to the question using tens? What is the answer to the all-number question?

3. Jack and Bill showed the answer to problem 1. Jack used the number line. Bill used the place-value frame. Explain how Jack found his answer. Explain how Bill found his answer.

Jack



Bill

hundreds	tens	ones
	●●● ●●	

Answer the questions below. Use the words "tens" or "hundreds." The first question is answered for you.

4.
$$\begin{array}{rcr}20 & = & 2 \text{ tens}\\ +40 & = & +4 \text{ tens}\\ \hline & & 6 \text{ tens} = 60\end{array}$$

$$\begin{array}{rrrrr}30 & 20 & 400 & 200 & 500\\ +10 & +50 & +200 & +300 & +400\\ \hline\end{array}$$

5. Check your answers for row 4. Use place-value frames.

Subtracting Tens and Hundreds

1. Look again at the stacks of books pictured on page 60. The first stack has how many more books than the second stack?

2. Jerry and Sue wrote these number questions for problem 1.

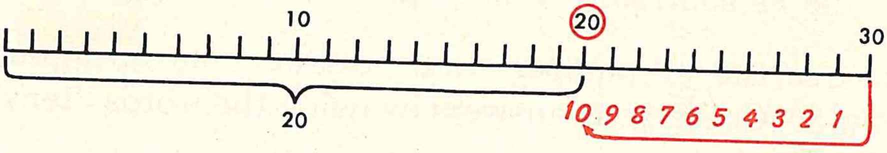
   Who wrote the all-number question? Write the answer to Jerry's number question. Write the answer to Sue's number question.

Jerry $\begin{array}{r} 3 \text{ tens} \\ \underline{-2 \text{ tens}} \end{array}$

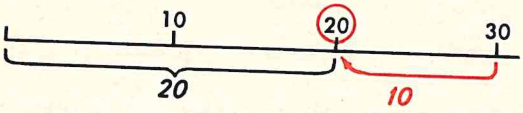
Sue $\begin{array}{r} 30 \\ \underline{-20} \end{array}$

3. Bob and Jack used number lines to answer problem 1. Look at their number lines. Who was thinking "ones"? Which boy was thinking "tens"?

Bob



Jack



Answer the questions below. Use the words "tens" or "hundreds." The first question is answered.

4. $\begin{array}{r} 60 \\ \underline{-40} \end{array} = \begin{array}{r} 6 \text{ tens} \\ \underline{-4 \text{ tens}} \\ 2 \text{ tens} = 20 \end{array}$ $\quad \begin{array}{r} 40 \\ \underline{-30} \end{array} \quad \begin{array}{r} 80 \\ \underline{-50} \end{array} \quad \begin{array}{r} 700 \\ \underline{-500} \end{array} \quad \begin{array}{r} 500 \\ \underline{-200} \end{array} \quad \begin{array}{r} 300 \\ \underline{-100} \end{array}$

5. Check your answers for row 4. Use place-value frames.

Mary

$$\begin{array}{r} 3 \text{ tens} \\ +4 \text{ tens} \\ \hline 7 \text{ tens} \end{array} = 70 \quad \text{or} \quad \begin{array}{r} 30 \\ +40 \\ \hline 70 \end{array}$$

George

$$\begin{array}{r} 6 \text{ hundreds} \\ -2 \text{ hundreds} \\ \hline 4 \text{ hundreds} \end{array} \quad \text{or} \quad \begin{array}{r} \text{hundreds} \downarrow \ \text{tens} \downarrow \ \text{ones} \\ 600 \\ -200 \\ \hline 400 \end{array}$$

Zeros in Addition and Subtraction

1. Look at Mary's all-number way of adding. To add she thought, "0 + 0 = 0." Then what numbers did she add? What was her answer?
2. George thought, "0 − 0 = 0" when he subtracted the zeros in ones place. He thought, "0 − 0 = 0" when he subtracted the zeros in tens place. Then what numbers did he subtract? What was his answer?

Use the all-number way. Answer the questions in row 3. Check your answers by using the words "tens" or "hundreds."

3.

$$\begin{array}{r} 30 \\ +60 \\ \hline \end{array} \qquad \begin{array}{r} 70 \\ +20 \\ \hline \end{array} \qquad \begin{array}{r} 500 \\ +300 \\ \hline \end{array} \qquad \begin{array}{r} 70 \\ -40 \\ \hline \end{array} \qquad \begin{array}{r} 80 \\ -70 \\ \hline \end{array} \qquad \begin{array}{r} 600 \\ -300 \\ \hline \end{array}$$

🟥 **Zero added to a number is the number.**

🟥 **Zero subtracted from a number is the number.**

4. Test these rules. Use dots to find the answers.

$$\begin{array}{r} 6 \\ +0 \\ \hline \end{array} \qquad \begin{array}{r} 0 \\ +7 \\ \hline \end{array} \qquad \begin{array}{r} 0 \\ +0 \\ \hline \end{array} \qquad \begin{array}{r} 1 \\ +0 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ +0 \\ \hline \end{array} \qquad \begin{array}{r} 0 \\ +3 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ +0 \\ \hline \end{array} \qquad \begin{array}{r} 8 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 0 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 8 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 1 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ -0 \\ \hline \end{array}$$

Giving a School Play

1. There were 40 boys and 50 girls in the play. How many children was this?
2. Joan had a bundle of 20 flags. Tom had a bundle of 30 flags. Tom had how many more than Joan?
3. Jim had 50 paper hats. He gave 40 hats to the boys. How many hats were left?
4. The parents helped with the show. There were 20 fathers and 20 mothers helping. How many parents helped?
5. Four hundred people came to see the show. One hundred of these were children. How many of the people were not children?
6. Seventy children sang a song. Thirty were boys. The rest were girls. How many girls were singing?
7. Twenty girls and 10 boys were in a dance. How many children were there in the dance?
8. Tom's father sold tickets near the door. He sold 100 tickets. If 400 people came to the show, how many had bought their tickets earlier?
9. Ann and Jack took tickets at the door. Jack took two hundred tickets. Ann took two hundred tickets. How many did they take in all?

New Ways to Study Addition and Subtraction Facts

A part of each fact is missing. Copy the fact. Write the missing number where it belongs.

1.	7	6	3	8	1	0	2	5
	+⍰	+⍰	+⍰	+0	+⍰	+⍰	+⍰	+2
	9	7	3	⍰	7	9	6	⍰

2.	6	8	7	⍰	5	6	⍰	0
	−3	−⍰	−5	−2	−⍰	−⍰	−4	−⍰
	⍰	2	⍰	4	3	1	5	0

3. 9 − ⍰ = 3   ⍰ − 5 = 4   ⍰ + 2 = 7

4. ⍰ + 7 = 8   4 − ⍰ = 2   10 − ⍰ = 7

5. 3 + ⍰ = 8   3 + ⍰ = 7   2 + ⍰ = 5

Play the addition guessing game this way: Don wrote an addition fact. He did not let anyone see what he wrote. Then Don said, "I wrote two numbers. Their sum is 8. What fact did I write?"

The other players wrote these guesses:

Sue	Tom	Bob	Jane
5	4	6	7
+3	+4	+2	+1
8	8	8	8

Don showed the fact he wrote. Bob's guess was right. Now it is Bob's turn to write a hidden fact. The others must guess.

Sometimes two or more players guess the right answer. Then these players choose a hidden fact.

Try This Subtraction Guessing Game

Sue wrote a subtraction fact. The other players did not see what she wrote. Then Sue said, "I wrote two numbers. They are smaller than 10. Their difference is 6. What fact did I write?"

The other players wrote these guesses:

Don $\begin{array}{r}9\\-3\\\hline 6\end{array}$ **Tom** $\begin{array}{r}8\\-2\\\hline 6\end{array}$ **Bob** $\begin{array}{r}7\\-1\\\hline 6\end{array}$ **Jane** $\begin{array}{r}6\\-0\\\hline 6\end{array}$

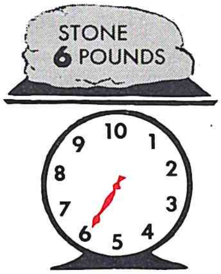
Sue showed the fact she wrote. Tom's guess was right. Then Tom wrote a subtraction fact. He could not use a number larger than 10. The others guessed.

Make the game more fun! When it is your turn, write an addition or a subtraction fact. In the subtraction facts, do not use numbers larger than 10.

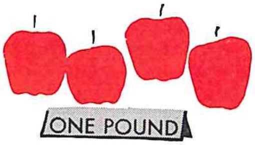
This practice may help your guessing game. Give answers without using a pencil.

1. $6 + 2 =$ ⍰ $4 + 3 =$ ⍰ $7 + 0 =$ ⍰ $9 + 1 =$ ⍰
2. $6 + 3 =$ ⍰ $3 + 5 =$ ⍰ $0 + 0 =$ ⍰ $4 + 4 =$ ⍰
3. $5 - 3 =$ ⍰ $8 - 7 =$ ⍰ $5 - 0 =$ ⍰ $9 - 3 =$ ⍰
4. $3 - 0 =$ ⍰ $6 - 3 =$ ⍰ $7 - 7 =$ ⍰ $9 - 2 =$ ⍰
5. $5 + 5 =$ ⍰ $8 + 2 =$ ⍰ $8 - 0 =$ ⍰ $7 + 2 =$ ⍰
6. Write the answers to the number questions in row 4. Use dots to show that your answers are right.

Making Up Your Own Problems

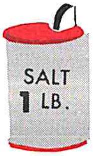


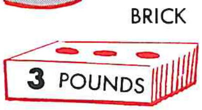
1. The class used this scale. The pictures show some of the things the class weighed. Name the things the class weighed. Tell what each thing weighs.



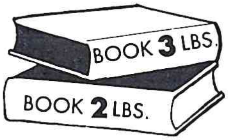
■ **"Lb." is a short way to write "pound" or "pounds."**

Use the weights of these things. Make some addition and subtraction problems. Here are two problems to help you.



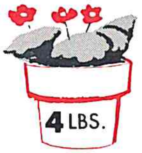


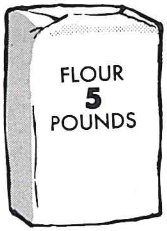
2. The stone weighs 6 lb. The brick weighs 3 lb. The stone weighs how much more than the brick?
3. Tom carried a 5-pound bag of flour and a 3-pound book. How many pounds was he carrying?


BOOK 3 LBS.
BOOK 2 LBS.

Write the answers:

4. When zero is added to a number, what is the sum?
5. If you subtract zero from a number, what is the answer?
6. The number sixty-one is equal to how many ones?
7. What number is shown on the place-value frame?





hundreds	tens	ones
●●●● ●●●●	●	●●●●● ●●●●

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Important Things to Remember

1. Are you writing your numbers correctly? Where do you begin the first stroke of each figure? Write the figures 0 through 9. Then turn to page 2. Did you begin each stroke at the right place?
2. Study the figures written on page 2. Practice writing them. Close your book. Write the numbers 0 through 9. Compare your figures with the figures on page 2. Are your numbers written correctly?
3. Write all the even numbers between 10 and 20.
4. The numbers 5, 7, and 9 are odd numbers. Why are they called odd numbers?
5. What do you do when you add two numbers? Make a drawing to show you are right.
6. Use the numbers 3, 4, 2, 5, and 6. Make as many addition facts as you can.
7. What do you do when you subtract one number from another? Make a drawing to show you are right.
8. Use the numbers 6, 8, 3, 7, 0, and 4. Make as many subtraction facts as you can.
9. Each row on the place-value frame shows a different number. Use figures to write each of the numbers.

hundreds	tens	ones
//	/////	/
	///	
/////	/	
/	//	/////
////	///	//////

Adding and Subtracting

Write the answer to each number question.

1.
$$\begin{array}{rrrrrrrr} 7 & 8 & 4 & 7 & 2 & 6 & 20 & 300 \\ +1 & +2 & +0 & +2 & +5 & +4 & +60 & +600 \\ \hline \end{array}$$

2.
$$\begin{array}{rrrrrrrr} 5 & 6 & 9 & 8 & 4 & 7 & 30 & 500 \\ -1 & -3 & -7 & -0 & -2 & -5 & -10 & -100 \\ \hline \end{array}$$

Write the missing part of each fact.

3.
$$\begin{array}{rrrrrrrr} 8 & 9 & ⍰ & ⍰ & 6 & ⍰ & 40 & 600 \\ -⍰ & +⍰ & +5 & +3 & -⍰ & -5 & +⍰⍰ & -⍰⍰⍰ \\ \hline 8 & 10 & 9 & 8 & 2 & 3 & 70 & 100 \end{array}$$

4.
$$\begin{array}{rrrrrrrr} 6 & ⍰ & ⍰ & 10 & ⍰ & 4 & 60 & ⍰⍰⍰ \\ +⍰ & +3 & -4 & -⍰ & +2 & -⍰ & -⍰⍰ & +200 \\ \hline 10 & 6 & 3 & 5 & 10 & 1 & 20 & 900 \end{array}$$

Read problems 5 and 6. Write the number question needed to solve each problem.

5. It snowed 8 inches one day. The next day it snowed 3 more inches. How much did it snow in all?

6. Mary earned 10 cents. She spent 5 cents of her money for an ice cream cone. How many cents did she have left?

🟥 **For the words "cent" and "cents" you can use the sign ¢.**

7. Read these amounts: 1¢, 10¢, 5¢, 25¢.

8. Tom had 6¢. Bill had 4¢. Together they had how many cents?

Getting a Clearer Picture of Zero

Bob had 4 sheets of paper. He used 4 sheets to write a letter. How many sheets were left? Draw a dot picture to show your answer is right.

■ **When a number is taken from a number equal to it, there is nothing left. The answer is zero.**

Make helper cards for these subtractions.

$$\begin{array}{rrrrrrrrrr} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ -0 & -1 & -2 & -3 & -4 & -5 & -6 & -7 & -8 & -9 \\ \hline 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}$$

■ **When zero is one of the numbers to be added, there is nothing to add. The sum is the other number.**

Make helper cards for these additions.

$$\begin{array}{rrrrrrrrrr} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ +0 & +0 & +0 & +0 & +0 & +0 & +0 & +0 & +0 & +0 \\ \hline 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \end{array}$$

$$\begin{array}{rrrrrrrrr} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ +1 & +2 & +3 & +4 & +5 & +6 & +7 & +8 & +9 \\ \hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \end{array}$$

■ **When zero is the number to be subtracted, there is nothing to subtract. The answer is the other number.**

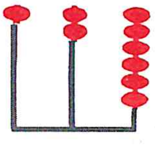
Make helper cards for these subtractions.

$$\begin{array}{rrrrrrrrrr} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ -0 & -0 & -0 & -0 & -0 & -0 & -0 & -0 & -0 & -0 \\ \hline 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \end{array}$$

How Well Have You Learned?

Do these exercises. Count your right answers. You can find how far you turned the pointer on the dial.

1. Make a dot drawing. Show that 4 from 6 equals 2. (52, 23)
2. Use numbers and words. Tell how you read $\begin{array}{r}5\\-3.\\\hline\end{array}$ (51)
3. In 5 – 3 what does the sign – mean? (51)
4. Draw a number line. Show that 8 – 5 = 3. (52, 53)
5. Use numbers. Write the number question "2 from 8 is how many?" (54)
6. What is the quickest way to find the answer to a subtraction question like "4 from 8 equals how much?" (53)
7. Use numbers and words. Tell how you read $\begin{array}{r}9\\-3.\\\hline 6\end{array}$ (54)
8. Write the number question for the following problem: Billy is 8 years old. He is how much older than Roy, who is 6 years old? (57)
9. Add 40 and 40. Use the word "tens." (60)
10. What is the rule for adding with zero? (62, 69)
11. What number does this abacus show? (27)



12. Two hundred from 700 is how much? (62)
13. Copy. Write the answers. (62)

$$\begin{array}{r}3\\+0\\\hline\end{array}\qquad\begin{array}{r}40\\-20\\\hline\end{array}\qquad\begin{array}{r}300\\+600\\\hline\end{array}\qquad\begin{array}{r}9\\-0\\\hline\end{array}\qquad\begin{array}{r}70\\-30\\\hline\end{array}\qquad\begin{array}{r}800\\-200\\\hline\end{array}$$

Helping Yourself

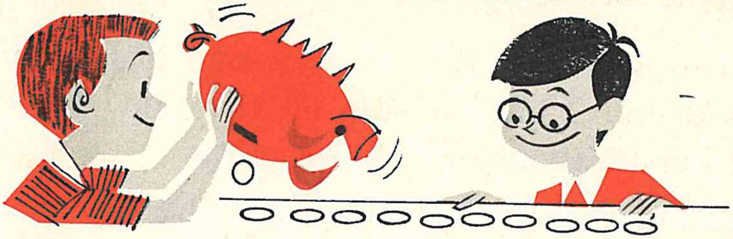
Where did you turn the pointer on the dial? Did it go far to the right? Then this page will be easy for you. If your dial showed that the things in Unit Two were not learned very well, use the helping pages.

1. How many dots must you draw to show that 6 is 2 more than 4? (50, 52)
2. Subtract 4 from 7 on a number line. Under what number does the 4 come? (52)
3. How are subtraction number questions different from addition number questions? Use the numbers 3, 4, and 7. Show this difference. (31, 49)
4. How is the subtraction number question $\begin{array}{r}5\\-2\\\hline\end{array}$ read? (51)
5. What is the best way to show, "2 from 9 = 7"? (53)
6. Use numbers. Write, "Two from ten is how many?" (51)
7. What are three good ways to study subtraction facts like $\begin{array}{r}9\\-3\\\hline 6\end{array}$? (55)
8. Show four ways to find the answer to the question, "How many are 20 + 20?" (60)
9. Copy. Watch the signs. Write the sum or difference. (62, 69)

$$\begin{array}{r}6\\+0\\\hline\end{array}\quad\begin{array}{r}8\\-0\\\hline\end{array}\quad\begin{array}{r}0\\+0\\\hline\end{array}\quad\begin{array}{r}0\\+6\\\hline\end{array}\quad\begin{array}{r}5\\-5\\\hline\end{array}\quad\begin{array}{r}2\\-2\\\hline\end{array}\quad\begin{array}{r}0\\+7\\\hline\end{array}\quad\begin{array}{r}0\\-0\\\hline\end{array}$$

How Well Are You Doing?

1. Write a number with 7 in tens place.
2. Write a number with 6 in hundreds place.
3. Write a number with 4 in ones place.
4. In the number 529, which figure is in tens place?
5. In the number 731, which figure is in hundreds place?
6. How many tens are there in 74?
7. How many hundreds are there in 814?
8. There are 9 milk bottles in a box. Five of the bottles are empty. How many are not empty?
9. A lunchroom ordered 20 bottles of chocolate and 30 bottles of white milk. How many bottles were ordered in all?
10. Fifty children wanted straws for their milk. There were only 30 straws in the holder. How many children had no straws?
11. There were 80 candy bars in a box. Twenty candy bars were small. The others were large. How many large bars were there?
12. Jack spent 20¢. Jim spent 30¢. Jim spent how many more cents than Jack did?
13. Forty cents is how much less than ninety cents?



Things to Remember About Eleven

1. Bob shook 10 pennies from his bank. Then he shook it harder. Out fell one more penny! How many pennies did he get out of his bank?

Eleven

tens	ones
1	1¢

■ **Ten and 1 more equal eleven.**

2. What figures do you use to write **eleven cents**? Use toy money. Show what the 1 in tens place means. Show what the 1 in ones place means. Remember that 11 equals 1 ten and 1 one.

Look at addition questions 3 through 5. For each question tell what numbers make 1 ten. Then answer the questions.

	Addition Question	Showing 1 ten		Add
3.	5 + 6 = ?	●●●●● + ●●●●● ●	or	5 + 5 + 1 = ?
4.	7 + 4 = ?	●●●●●●● + ●●● ●	or	7 + 3 + 1 = ?
5.	2 + 9 = ?	●● + ●●●●●●●● ●	or	2 + 8 + 1 = ?

6. Show these addition questions in the same way. Add.

3 + 8 = ? 9 + 2 = ? 4 + 7 = ? 6 + 5 = ? 8 + 3 = ?

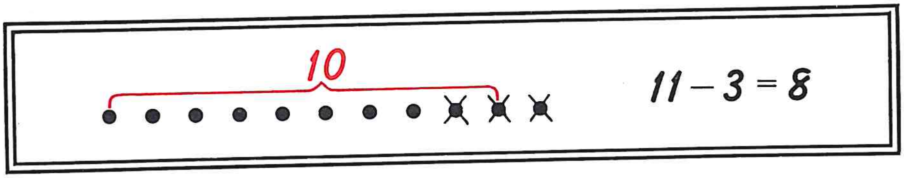
Learning the Subtraction Facts for Eleven

1. Turn to page 48. Eight of the addition questions in rows 6 and 7 have a sum of 11. Copy these eight addition questions. Write the sums.

2. A part of each fact is missing. The question mark shows where the number belongs. Copy. Write the missing number in place of the question mark.

9	6	4	?	8	?	?	7
+?	+?	+?	+9	+?	+6	+8	+?
11	11	11	11	11	11	11	11

3. There were 11 pencils on the table. Three pencils were sharpened. The others were not. How many pencils were not sharpened? Explain Tom's dot picture.



How many dots did he cross out in all? How many dots did he take from the 10-group?

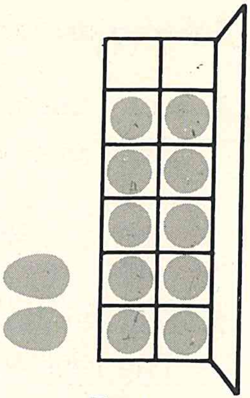
4. Use dots as Tom did. Show these subtractions.

11	11	11	11	11	11	11	11
−5	−9	−3	−7	−6	−8	−4	−2
6	2	8	4	5	3	7	9

Make helper cards for the subtractions above. Put them with your other helper cards. Play the game for two. Page 41 tells you how to play it.

Be Sure You Know About Twelve

1. Count the eggs in the box by 2's.
2. Count all the eggs by 2's.
3. If 2 more eggs are put into the box, the box will be full. How many eggs are there in a full box?



■ **Ten and 2 more equal twelve.**

Remember there is one 10-group or 1 ten in 12. Think of the 10-group for each addition question below. Then answer the addition number question.

Twelve

tens	ones
1	2

	Addition Question	The 10-group	Add
4.	5 + 7 = ?	Think: 5 + 5 = 10	5 + 5 + 2 = ?
5.	6 + 6 = ?	Think: 6 + 4 = 10	6 + 4 + 2 = ?
6.	3 + 9 = ?	Think: 3 + 7 = 10	3 + 7 + 2 = ?
7.	8 + 4 = ?	Think: 8 + 2 = 10	8 + 2 + 2 = ?

8. Use dots. Show the following additions. Draw a line around the dots that make the 10-group. Then add.

9 + 3 = ? 7 + 5 = ? 4 + 8 = ?

Twelve is a number you use often when you shop, because many things are sold by the dozen.

■ **12 things = 1 dozen.**
"Doz." is the short way to write "dozen" or "dozens."

9. Name different things that are sold by the dozen.

Subtraction Facts for Twelve

1. Copy these additions. Write the missing number in place of the question mark.

$$\begin{array}{r} 8 \\ +? \\ \hline 12 \end{array} \qquad \begin{array}{r} 3 \\ +? \\ \hline 12 \end{array} \qquad \begin{array}{r} 6 \\ +? \\ \hline 12 \end{array} \qquad \begin{array}{r} ? \\ +8 \\ \hline 12 \end{array} \qquad \begin{array}{r} 7 \\ +? \\ \hline 12 \end{array} \qquad \begin{array}{r} ? \\ +3 \\ \hline 12 \end{array} \qquad \begin{array}{r} ? \\ +7 \\ \hline 12 \end{array}$$

2. Mother bought a dozen eggs. Five eggs were white. The rest were brown. How many were brown?

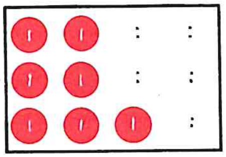
Draw all the eggs. How many did you draw? Cross out the number of white eggs. How many are not crossed out?

3. Write the subtraction number question for problem 2. Write the answer, or difference.

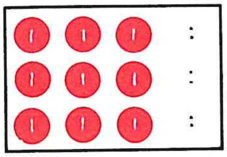
4. Sue bought a card of 12 buttons. She took 4 buttons off the card. How many were left on the card?

If you cannot answer the subtraction question "4 from 12 is how many?" which card will help you?

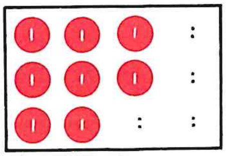
Card 1



Card 2



Card 3



5. Make up a subtraction question about each of the other two cards in the picture.

Make helper cards for these subtraction facts for 12. Be sure you know them well.

$$\begin{array}{r} 12 \\ -3 \\ \hline 9 \end{array} \qquad \begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array} \qquad \begin{array}{r} 12 \\ -8 \\ \hline 4 \end{array} \qquad \begin{array}{r} 12 \\ -5 \\ \hline 7 \end{array} \qquad \begin{array}{r} 12 \\ -9 \\ \hline 3 \end{array} \qquad \begin{array}{r} 12 \\ -4 \\ \hline 8 \end{array} \qquad \begin{array}{r} 12 \\ -7 \\ \hline 5 \end{array}$$

Ways to Remember Addition and Subtraction Facts

1. Very often if you know one fact well, you really know four facts. Look at the facts for 2, 9, and 11 given here. Read the addition pair. Read the subtraction pair. Read the four facts that belong together.

$$\overbrace{\begin{array}{r} 2 \\ +9 \\ \hline 11 \end{array} \quad \begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array}}^{\text{Addition Pair}} \qquad \overbrace{\begin{array}{r} 11 \\ -9 \\ \hline 2 \end{array} \quad \begin{array}{r} 11 \\ -2 \\ \hline 9 \end{array}}^{\text{Subtraction Pair}} \qquad \overbrace{\begin{array}{r} 2 \\ +9 \\ \hline 11 \end{array} \quad \begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array} \quad \begin{array}{r} 11 \\ -9 \\ \hline 2 \end{array} \quad \begin{array}{r} 11 \\ -2 \\ \hline 9 \end{array}}^{\text{Four Facts Using 2, 9, 11}}$$

No Pencils, Please!

What number belongs in place of each question mark?

2. $$\begin{array}{r} 4 \\ +\boxed{?} \\ \hline 12 \end{array} \quad \begin{array}{r} 8 \\ +\boxed{?} \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ -\boxed{?} \\ \hline 8 \end{array} \quad \begin{array}{r} 12 \\ -\boxed{?} \\ \hline 4 \end{array} \quad \begin{array}{r} \boxed{?} \\ +8 \\ \hline 12 \end{array} \quad \begin{array}{r} 4 \\ +\boxed{?} \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ -8 \\ \hline \boxed{?} \end{array} \quad \begin{array}{r} 12 \\ -\boxed{?} \\ \hline 8 \end{array}$$

3. $$\begin{array}{r} 5 \\ +\boxed{?} \\ \hline 11 \end{array} \quad \begin{array}{r} \boxed{?} \\ +6 \\ \hline 11 \end{array} \quad \begin{array}{r} 11 \\ -5 \\ \hline \boxed{?} \end{array} \quad \begin{array}{r} 11 \\ -\boxed{?} \\ \hline 5 \end{array} \quad \begin{array}{r} 5 \\ +6 \\ \hline \boxed{?} \end{array} \quad \begin{array}{r} \boxed{?} \\ +5 \\ \hline 11 \end{array} \quad \begin{array}{r} 11 \\ -\boxed{?} \\ \hline 5 \end{array} \quad \begin{array}{r} 11 \\ -5 \\ \hline \boxed{?} \end{array}$$

4. For each set of three numbers write four facts. Two will be addition facts. The other two will be subtraction facts.

4, 7, 11	3, 5, 8	6, 4, 10	3, 8, 11
5, 7, 12	9, 3, 12	3, 7, 10	8, 2, 10

5. Doubles have only one addition fact and one subtraction fact. Can you tell why?

$$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array} \quad \begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ +6 \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array} \qquad \begin{array}{r} 5 \\ +5 \\ \hline 10 \end{array} \quad \begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array} \qquad \begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

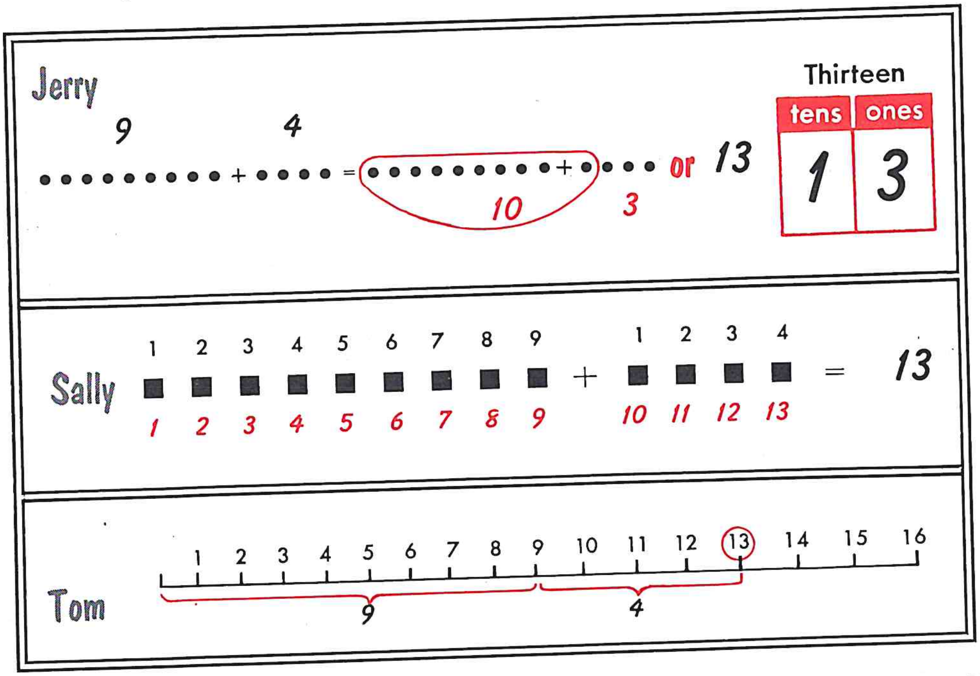
Answering Addition Number Questions About 13

1. Joe addressed 9 letters. Sue addressed 4 letters. How many did they address in all?

   Write the addition number question for this problem. Use figures only.

2. Use small sheets of paper to stand for Joe's and Sue's letters. Find the answer to your addition question.

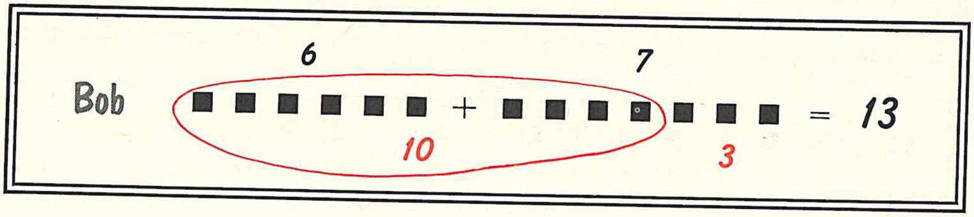
3. Look at these pictures. These children drew them to answer the number question "9 and 4 are how many?" Did you get the same answer as they did?



4. Which child used the number line to show his answer?
5. Which child counted one by one?
6. Who made 1 ten and then counted the ones?

7. Bill sealed 5 of the letters. Mary sealed 8 of them. Were all of the thirteen letters sealed? Write the addition number question for this problem. Use figures only.
8. Use a number line. Find the answer to your addition number question.
9. Draw another number line. Show that the number question "8 and 5 are how many?" has the same answer as "5 and 8 are how many?"
10. Jane put stamps on 6 letters. Bob put stamps on 7 letters. On how many letters did they put stamps?

Look at the picture Bob made to show the answer.



How many ones did Bob put with six? How many tens did this make? How many ones were left after Bob made the group of ten ones?

11. Use figures only. Write the addition number question for problem 10. Then write the answer.
12. Draw a picture as Bob did. Show that the answer to "7 and 6 are how many?" is the same as the answer to "6 and 7 are how many?"

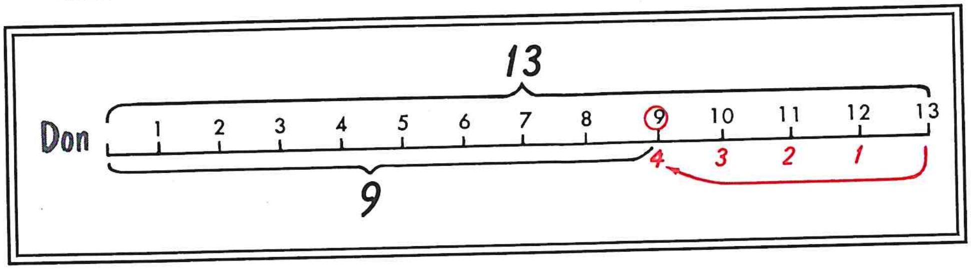
Answering Subtraction Questions About 13

1. Don mailed 4 of the 13 letters. Roy mailed the rest of the letters. How many did Roy mail?

   Write the subtraction number question for this problem. Use figures only.

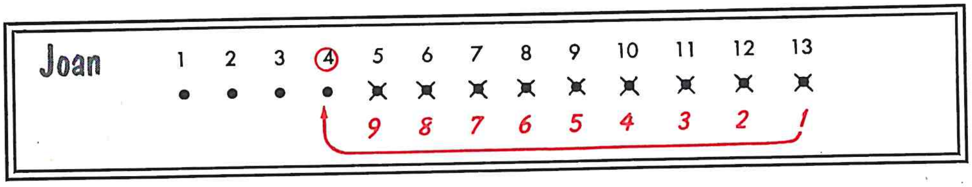
2. Get 13 small sheets of paper. Play they are letters. Take away Don's 4 letters. Count the rest of the letters. Now write the answer to your subtraction number question.

3. Don drew this number line. It shows the answer to your number question. Explain how Don found the answer.



4. Draw a number line. Show that 13 − 9 = 4.

5. Joan used dots. What subtraction fact did she show?



6. Use dots as Joan did. Show that these subtraction facts are true:

   13 − 5 = 8   13 − 8 = 5   13 − 6 = 7   13 − 7 = 6

Things You Want to Remember

Make helper cards for these facts. Put these cards in your helper card stacks. Pages 39 and 55 show you how to study your cards.

Addition Facts for Thirteen	4	5	6	7	8	9
	+9	+8	+7	+6	+5	+4
	13	13	13	13	13	13
Subtraction Facts for Thirteen	13	13	13	13	13	13
	−4	−5	−6	−7	−8	−9
	9	8	7	6	5	4

1. Write the addition facts for 13 in pairs.
2. Write the subtraction facts for 13 in pairs.

Use folded paper. Write the answers. Watch signs.

3.	4	4	9	6	9	3	5
	+7	+9	+2	+6	+4	+8	+7
4.	3	5	2	8	7	8	8
	+9	+8	+9	+4	+4	+5	+3
5.	5	9	4	7	6	7	6
	+6	+3	+8	+6	+5	+5	+7
6.	13	11	12	12	11	13	12
	−9	−4	−8	−3	−6	−4	−6
7.	11	12	13	11	13	12	11
	−9	−9	−7	−3	−5	−4	−8
8.	11	13	11	12	13	12	11
	−5	−6	−2	−5	−8	−7	−7

Using Fourteen

1. Joe and Ann are putting things on the bulletin board. Ann put 10 colored leaves on the board. Joe added 4 more leaves. How many leaves are there?

Fourteen

tens	ones
1	4

2. Draw 14 dots. Show that 1 ten and 4 ones equal 14.
3. Ann put 7 drawing papers on the board. Joe put 7 spelling papers on the board. How many papers are there in all? Use the number line. Show that your answer is right.
4. Cover 7 of the papers on the bulletin board. Answer this subtraction question: "14 minus 7 = ⍰"

Answer these addition questions. Think of the 10-group. Then give the answer to the question.

	Addition Question	The 10-group	Add
5.	5 + 9 = ⍰	5 + 5 = 10	5 + 5 + 4 = ⍰
6.	6 + 8 = ⍰	6 + 4 = 10	6 + 4 + 4 = ⍰
7.	9 + 5 = ⍰	9 + 1 = 10	9 + 1 + 4 = ⍰
8.	8 + 6 = ⍰	8 + 2 = 10	8 + 2 + 4 = ⍰

9. There are two pairs of addition facts for fourteen. Write the fact that is missing in each pair.

Addition Pair

$$\begin{array}{r} 5 \\ +9 \\ \hline 14 \end{array} \qquad \begin{array}{r} ? \\ +? \\ \hline ? \end{array}$$

Addition Pair

$$\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array} \qquad \begin{array}{r} ? \\ +? \\ \hline ? \end{array}$$

10. Draw 14 dots. Then cross out dots to show that 14 − 5 = 9.

11. Draw 14 dots. Then cross out dots to show that 14 − 6 = 8.

Here are the addition and subtraction facts for 14. Make helper cards for these facts.

Addition Facts for Fourteen	$\begin{array}{r} 5 \\ +9 \\ \hline 14 \end{array}$	$\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 8 \\ +6 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$
Subtraction Facts for Fourteen	$\begin{array}{r} 14 \\ -5 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ -6 \\ \hline 8 \end{array}$	$\begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$	$\begin{array}{r} 14 \\ -8 \\ \hline 6 \end{array}$	$\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$

12. Write four facts using 5, 9, and 14. Two are to be addition facts. The other two are to be subtraction facts.

13. Write four facts using 6, 8, and 14. Two are to be addition facts. The other two are to be subtraction facts.

14. Use the numbers 7, 7, and 14. Write one addition fact and one subtraction fact.

Using Fifteen

Fifteen

tens	ones
1	5

1. Jim has a dime and a nickel. Draw 10 pennies for the dime. Draw 5 pennies for the nickel. How many cents has he in all?

2. Use toy or real pennies. Answer these questions.

   5¢ + 5¢ + 5¢ = ?¢ 6¢ + 4¢ + 5¢ = ?¢ 9¢ + 6¢ = ?¢

   9¢ + 1¢ + 5¢ = ?¢ 10¢ + 5¢ = ?¢ 6¢ + 9¢ = ?¢

3. Joe had 15¢. He spent 8¢. How many cents did he have left? Use dots to show that your answer is right. Write the subtraction fact for this problem.

4. Copy. Write the number that belongs in place of each question mark.

$$\begin{array}{r}9\\+6\\\hline 15\end{array}\quad\begin{array}{r}6\\+?\\\hline 15\end{array}\quad\begin{array}{r}15\\-6\\\hline ?\end{array}\quad\begin{array}{r}15\\-?\\\hline 6\end{array}\qquad\begin{array}{r}8\\+7\\\hline 15\end{array}\quad\begin{array}{r}?\\+8\\\hline 15\end{array}\quad\begin{array}{r}15\\-?\\\hline 7\end{array}\quad\begin{array}{r}15\\-7\\\hline ?\end{array}$$

5. Ann had 15 dolls. Seven were large dolls. The others were small. How many small dolls did she have? Write the subtraction fact for this problem.

6. Jerry had 6 marbles in his hand. He had 9 marbles in his pocket. How many marbles did he have? Write the addition fact for this problem.

Make helper cards for these facts.

Addition Facts for 15

$$\begin{array}{r}6\\+9\\\hline 15\end{array}\quad\begin{array}{r}7\\+8\\\hline 15\end{array}\quad\begin{array}{r}8\\+7\\\hline 15\end{array}\quad\begin{array}{r}9\\+6\\\hline 15\end{array}$$

Subtraction Facts for 15

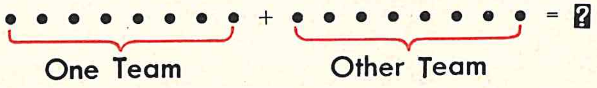
$$\begin{array}{r}15\\-6\\\hline 9\end{array}\quad\begin{array}{r}15\\-7\\\hline 8\end{array}\quad\begin{array}{r}15\\-8\\\hline 7\end{array}\quad\begin{array}{r}15\\-9\\\hline 6\end{array}$$

Facts for Sixteen

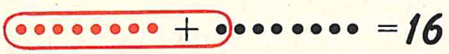
Sixteen

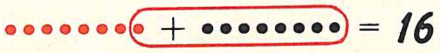
tens	ones
1	6

1. Ten girls and 6 boys went to a picnic. How many children was this? Think: "One ten and 6 ones is how many?" Draw dots to show that your answer is right.
2. The children played a game. They made two teams. There were 8 children on each team. Did all of the children play the game? The dot picture will help you. Write the addition fact for 8 + 8.

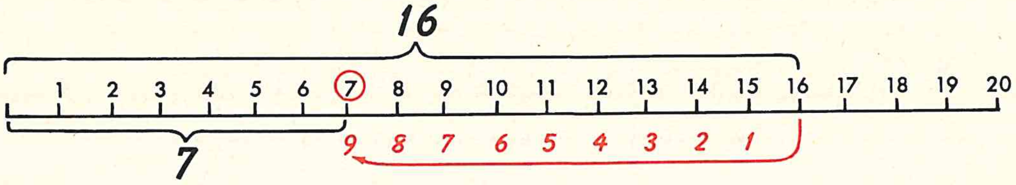


3. Remember the fact 8 + 8 = 16. It will help you to remember the other two addition facts for sixteen. The dot pictures show these "near doubles" facts. Write the two addition facts.





4. Write the subtraction fact shown on the number line.



5. Draw a number line. Show that 16 − 7 = 9.

Make helper cards for these facts.

$\begin{array}{r} 8 \\ +8 \\ \hline 16 \end{array}$ $\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$ $\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$ $\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$ $\begin{array}{r} 16 \\ -7 \\ \hline 9 \end{array}$ $\begin{array}{r} 16 \\ -9 \\ \hline 7 \end{array}$

Facts for Seventeen and Eighteen

1. What does this place-value frame tell you about seventeen?

tens	ones
•	• • • • • • •

2. Tom had 8 white rabbits. Jack had 9 gray rabbits. Together they had how many rabbits? Write the addition fact for this problem. Draw dots to show that you have the right answer.

Seventeen

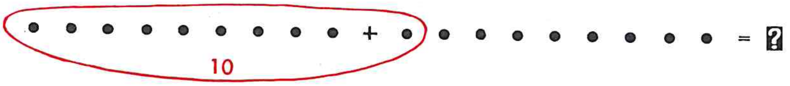
tens	ones
1	7

3. Draw a number line. Show the answer to the addition question, "9 and 8 are how many?"
4. Use the numbers 8, 9, and 17. Write a pair of addition facts.
5. Use the numbers 8, 9, and 17. Write a pair of subtraction facts.

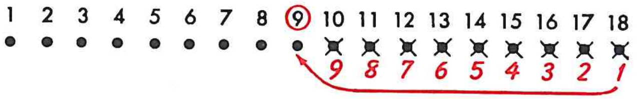
Eighteen

tens	ones
1	8

6. Draw a place-value frame. Draw dots in the frame to show eighteen.
7. Write the addition fact for this dot picture.



8. Write a subtraction fact for this dot picture.



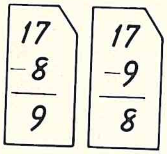
Make helper cards for these facts. Study the facts. Try to write them from memory.

$\begin{array}{r}8\\+9\\\hline 17\end{array}$ $\begin{array}{r}9\\+8\\\hline 17\end{array}$ $\begin{array}{r}17\\-9\\\hline 8\end{array}$ $\begin{array}{r}17\\-8\\\hline 9\end{array}$ $\begin{array}{r}9\\+9\\\hline 18\end{array}$ $\begin{array}{r}18\\-9\\\hline 9\end{array}$

Study Your Addition and Subtraction Facts

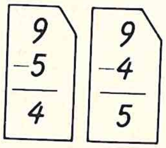
Use your 100 addition helper cards. Lay them on your desk in addition pairs. There will be 45 pairs.

Pair



Use your 100 subtraction helper cards. Lay them on your desk in subtraction pairs. There will be 36 pairs.

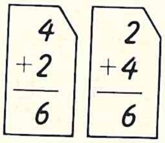
Pair



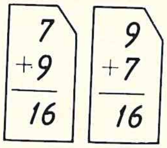
Write answers on folded paper. Watch the signs.

1.	14 −5	15 −7	4 +9	16 −9	7 +8	14 −8	13 −6
2.	6 +8	15 −6	9 +8	14 −7	17 −8	7 +6	5 +9
3.	14 −9	6 +7	16 −7	7 +7	16 −8	8 +6	13 −9
4.	8 +5	13 −4	9 +6	18 −9	13 −5	6 +9	8 +8
5.	9 +7	9 +9	5 +8	15 −8	13 −7	7 +9	9 +4
6.	15 −9	8 +7	17 −9	14 −6	13 −8	9 +5	8 +9

Pair



Pair



7. Write a pair of addition facts and a pair of subtraction facts for each set of numbers.

6, 9, 15	5, 8, 13	3, 9, 12	6, 8, 14
9, 7, 16	4, 7, 11	7, 8, 15	9, 8, 17

The 100 Important Addition Questions

Write the sums as fast as you can on folded paper.

1.	6	0	4	3	0	1	3	0	3	0
	+1	+9	+3	+1	+7	+0	+6	+8	+3	+3
2.	2	4	4	8	1	9	4	7	5	1
	+4	+5	+2	+0	+4	+0	+4	+1	+5	+8
3.	0	1	0	2	5	1	2	1	1	2
	+0	+7	+1	+9	+4	+6	+0	+1	+9	+1
4.	5	7	0	4	3	2	5	0	9	1
	+0	+7	+5	+0	+2	+5	+1	+4	+1	+5
5.	2	8	2	1	7	3	4	3	2	3
	+6	+3	+3	+2	+3	+4	+8	+5	+8	+8
6.	8	0	3	6	4	9	2	6	1	7
	+1	+2	+0	+2	+1	+2	+2	+0	+3	+0
7.	4	2	6	6	8	8	9	9	7	7
	+6	+7	+7	+5	+7	+6	+7	+3	+5	+9
8.	5	3	8	8	6	9	7	3	6	0
	+2	+9	+9	+4	+3	+4	+2	+7	+6	+6
9.	6	5	6	5	9	5	4	7	6	7
	+4	+3	+8	+8	+5	+9	+7	+8	+9	+6
10.	8	9	8	5	4	7	5	9	9	8
	+8	+9	+2	+6	+9	+4	+7	+6	+8	+5

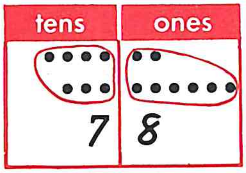
The 100 Important Subtraction Questions

Write the differences quickly on folded paper.

1.	3	6	8	9	1	7	4	7	9	7
	−0	−3	−0	−3	−1	−0	−3	−4	−0	−6
2.	9	8	8	10	9	6	9	6	8	5
	−9	−4	−7	−5	−1	−2	−4	−4	−8	−1
3.	11	1	8	0	3	10	2	2	7	9
	−2	−0	−1	−0	−2	−1	−1	−2	−1	−5
4.	6	10	4	6	7	5	4	5	14	5
	−1	−9	−0	−5	−2	−3	−4	−0	−7	−5
5.	10	3	5	11	8	7	12	8	10	11
	−7	−1	−2	−8	−2	−3	−4	−3	−2	−3
6.	7	4	6	4	11	5	8	3	2	9
	−7	−1	−6	−2	−9	−4	−6	−3	−0	−8
7.	16	12	12	16	14	11	13	9	10	15
	−7	−7	−9	−9	−8	−6	−6	−2	−4	−8
8.	6	12	10	9	13	13	15	15	11	14
	−0	−6	−3	−7	−9	−7	−6	−7	−4	−5
9.	13	17	15	12	11	9	12	17	12	7
	−8	−9	−9	−5	−7	−6	−8	−8	−3	−5
		56								
10.	14	13	14	8	10	13	11	10	18	16
	−9	−5	−6	−5	−6	−4	−5	−8	−9	−8

Selling Tickets for a School Play

Bob



1. The boys sold 42 tickets. The girls sold 36 tickets. How many tickets did they sell in all?

Bob used a place-value frame. Explain how he added.

Mary added a long way. She wrote:

42 = 4 tens and 2 ones
+36 = +3 tens and 6 ones

7 tens and 8 ones, or 78 tickets

	tens	ones
Tom	4	2
	+3	6
	7	8

Explain Mary's addition. Add the ones first.

Tom used the shortest way. He wrote the numbers to be added. He added the ones first, "2 ones and 6 ones are 8 ones." He wrote the figure 8 in ones place.

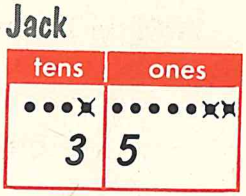
Then he added the tens, "4 tens and 3 tens are 7 tens." He wrote 7 in tens place. Read Tom's answer.

Add the way Tom did. Add the ones first.

2.	23 +36	45 +52	18 +61	52 +24	73 +26	25 +32	84 +15	66 +22
3.	34 +54	56 +23	72 +14	22 +47	67 +21	42 +56	26 +42	14 +53
4.	74 +25	43 +45	65 +23	58 +41	32 +57	44 +35	62 +26	16 +82

5. Jack's father had 47 tickets to sell. He told Jack that he still had 12 tickets to sell. How many tickets had he sold?

Explain how Jack subtracted. Subtract the ones first.



Billy subtracted a long way. He wrote:

47 = 4 tens and 7 ones
−12 = −1 ten and 2 ones
3 tens and 5 ones, or 35 tickets

Ann subtracted the shortest way. She wrote the numbers to be subtracted. She subtracted the ones first, "2 ones from 7 ones is 5 ones." She wrote 5 in ones place.

	tens	ones
Ann	4	7
	−1	2
	3	5

Then she subtracted the tens, "1 ten from 4 tens is 3 tens." She wrote 3 in tens place. Read her answer.

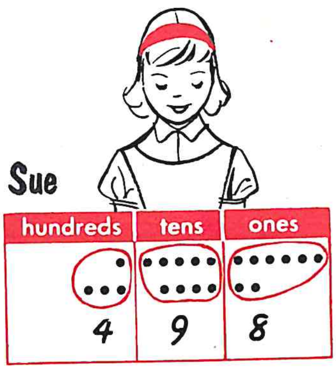
Subtract the way Ann did. Subtract the ones first.

6.	59 −23	97 −52	79 −61	99 −73	57 −25	89 −15	58 −24	76 −33
7.	89 −34	78 −23	86 −72	69 −22	87 −35	98 −56	68 −26	54 −43
8.	97 −25	88 −43	65 −23	58 −46	67 −32	84 −51	75 −23	98 −72

Adding Three-Place Numbers

1. A farmer has 156 gray chickens and 342 white chickens. How many has he in all?

Sue showed her addition on a place-value frame. Explain how she added.



Jane added another way. She wrote:

156 = 1 hundred 5 tens 6 ones
+342 = +3 hundreds 4 tens 2 ones
4 hundreds 9 tens 8 ones, or 498

Explain Jane's work. Add the ones first.

Joe used a short way. He wrote, "Hundreds, tens, and ones." He wrote 1 in hundreds place, 5 in tens place, and 6 in ones place. Then he wrote 3 under the 1. Why? Why did he write 4 under the 5? Why did he write 2 under the 6?

	hundreds	tens	ones
Joe	1	5	6
	+3	4	2
	4	9	8

2. Explain how Joe added. Begin with the ones.

Add the way Joe did. Add the ones first.

3.	473	516	254	825	151	263	447
	+425	+162	+534	+173	+725	+616	+342
4.	354	743	836	532	628	555	278
	+525	+133	+162	+417	+341	+232	+511

The Baker Subtracts Three-Place Numbers

SUBTRACTION

$$\begin{array}{r} 567 \\ -314 \\ \hline 253 \end{array}$$

1. A baker had 567 pounds of sugar. He used 314 pounds. He wanted to know how many pounds he had left. He wrote this subtraction.

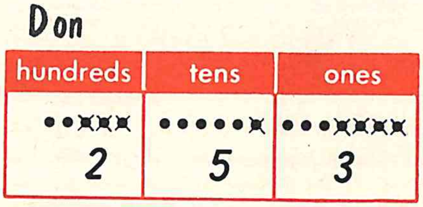
   Why did he write the 4 under the 7?
   Why did he write the 1 under the 6?
   Where did he write the 3 in 314? Why?

2. Jim and Don showed the class that 253 was the right answer. Jim subtracted a long way. He wrote:

567	=	5 hundreds	6 tens	7 ones
−314	=	−3 hundreds	1 ten	4 ones
		2 hundreds	5 tens	3 ones

To subtract the ones he used the subtraction fact 7 − 4 = 3. What subtraction fact did he use to subtract the tens? The hundreds?

Don showed the right answer on a place-value frame. Explain Don's picture.



Don

hundreds	tens	ones
●●⊗⊗⊗ 2	●●●●●⊗ 5	●●●⊗⊗⊗⊗ 3

Use numbers only. Copy and write the answers. Subtract ones first.

3.	795	679	788	876	879	789	657
	−524	−327	−263	−442	−628	−523	−423
4.	584	636	885	946	572	797	468
	−373	−214	−544	−225	−351	−684	−245

Addition Races

Divide the class into a Red Team and a Blue Team. The team getting the most right answers wins!

Work as fast as you can, but work carefully, too. Wrong answers will not help your team.

Use folded paper. Write the sums.

Race 1. Ready! Go!

1.	17 +21	34 +45	62 +24	75 +23	25 +62	83 +16
2.	71 +33	82 +14	74 +34	23 +85	56 +52	34 +33
3.	82 +27	43 +64	13 +36	48 +61	17 +82	53 +56

Race 2. Ready! Go!

1.	231 +528	146 +423	221 +725	653 +145	722 +273
2.	511 +476	342 +254	453 +546	511 +234	617 +321

Race 3. Ready! Go!

1. $\begin{array}{r}7\\+6\\\hline\end{array}$ $\begin{array}{r}5\\+4\\\hline\end{array}$ $\begin{array}{r}8\\+8\\\hline\end{array}$ $\begin{array}{r}3\\+7\\\hline\end{array}$ $\begin{array}{r}2\\+4\\\hline\end{array}$ $\begin{array}{r}6\\+6\\\hline\end{array}$

2. $\begin{array}{r}9\\+2\\\hline\end{array}$ $\begin{array}{r}7\\+8\\\hline\end{array}$ $\begin{array}{r}3\\+4\\\hline\end{array}$ $\begin{array}{r}6\\+4\\\hline\end{array}$ $\begin{array}{r}7\\+7\\\hline\end{array}$ $\begin{array}{r}8\\+5\\\hline\end{array}$

3. $\begin{array}{r}8\\+3\\\hline\end{array}$ $\begin{array}{r}5\\+7\\\hline\end{array}$ $\begin{array}{r}5\\+3\\\hline\end{array}$ $\begin{array}{r}6\\+8\\\hline\end{array}$ $\begin{array}{r}7\\+2\\\hline\end{array}$ $\begin{array}{r}8\\+4\\\hline\end{array}$

Race 4. Ready! Go!

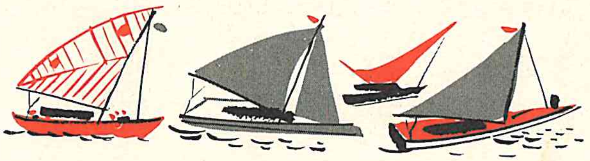
1. $\begin{array}{r}7\\+9\\\hline\end{array}$ $\begin{array}{r}4\\+7\\\hline\end{array}$ $\begin{array}{r}35\\+24\\\hline\end{array}$ $\begin{array}{r}64\\+32\\\hline\end{array}$ $\begin{array}{r}415\\+462\\\hline\end{array}$ $\begin{array}{r}536\\+261\\\hline\end{array}$

2. $\begin{array}{r}9\\+4\\\hline\end{array}$ $\begin{array}{r}6\\+5\\\hline\end{array}$ $\begin{array}{r}56\\+43\\\hline\end{array}$ $\begin{array}{r}25\\+54\\\hline\end{array}$ $\begin{array}{r}534\\+213\\\hline\end{array}$ $\begin{array}{r}627\\+152\\\hline\end{array}$

3. $\begin{array}{r}5\\+4\\\hline\end{array}$ $\begin{array}{r}3\\+7\\\hline\end{array}$ $\begin{array}{r}72\\+26\\\hline\end{array}$ $\begin{array}{r}41\\+42\\\hline\end{array}$ $\begin{array}{r}325\\+423\\\hline\end{array}$ $\begin{array}{r}264\\+631\\\hline\end{array}$

Which team won Race 1? Which team won Race 2? Which team won Race 3? Which team won Race 4? How many races did your team win? Did you help your team?

Try these races again some day.



How Well Have You Learned?

Get as many right answers as you can. Then look at the dial. Find where you turned the pointer. Your right answers will tell you.

1. Ten and 1 more are how many? (73, 75)

$4 + 6 + 1 = \boxed{?}$ $\qquad$ $4 + 6 + 2 = \boxed{?}$

2. Copy. Write the number for each question mark. (74, 76)

$$\begin{array}{r} 12 \\ -\boxed{?} \\ \hline 9 \end{array} \qquad \begin{array}{r} 11 \\ -7 \\ \hline \boxed{?} \end{array} \qquad \begin{array}{r} 12 \\ -4 \\ \hline \boxed{?} \end{array} \qquad \begin{array}{r} 11 \\ -\boxed{?} \\ \hline 6 \end{array} \qquad \begin{array}{r} 12 \\ -\boxed{?} \\ \hline 8 \end{array} \qquad \begin{array}{r} 11 \\ -\boxed{?} \\ \hline 9 \end{array} \qquad \begin{array}{r} 11 \\ -7 \\ \hline \boxed{?} \end{array}$$

3. Draw a number line. Show 5 + 8 = 13. (78)

4. Copy. Write the answers. Watch the signs. (81, 83–84)

$$\begin{array}{r} 7 \\ +7 \\ \hline \end{array} \qquad \begin{array}{r} 13 \\ -5 \\ \hline \end{array} \qquad \begin{array}{r} 15 \\ -8 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ +9 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ +8 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ +6 \\ \hline \end{array} \qquad \begin{array}{r} 15 \\ -8 \\ \hline \end{array} \qquad \begin{array}{r} 14 \\ -5 \\ \hline \end{array}$$

5. Use dots. Show 18 on a place-value frame. (86)

6. Write a pair of addition facts and a pair of subtraction facts for each set of three numbers. (77, 85–87)

7, 9, 16 $\qquad$ 9, 8, 17 $\qquad$ 5, 8, 13

7. Use dots. Show 435 on a place-value frame. (92)

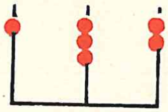
8. Copy. Write the answers. Watch the signs. (90–93)

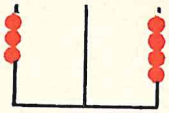
$$\begin{array}{r} 35 \\ +42 \\ \hline \end{array} \qquad \begin{array}{r} 72 \\ +25 \\ \hline \end{array} \qquad \begin{array}{r} 463 \\ +436 \\ \hline \end{array} \qquad \begin{array}{r} 78 \\ -34 \\ \hline \end{array} \qquad \begin{array}{r} 97 \\ -25 \\ \hline \end{array} \qquad \begin{array}{r} 859 \\ -724 \\ \hline \end{array}$$

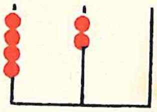
Helping Yourself

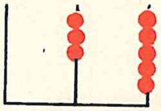
Find the answers. If you have trouble, study the helping pages. Their numbers are printed in red after each exercise.

1. Write the number that each abacus shows. (27)

A 

B 

C 

D 

2. Draw dots. Show 47 on a place-value frame. (90)
3. Draw a place-value frame. Use dots. Show the addition 24 + 32 = 56. (90)
4. Draw a place-value frame. Use dots. Show the subtraction 56 − 42 = 14. (91)
5. Draw a place-value frame. Use dots. Show the subtraction 637 − 423 = 214. (93)
6. Copy the numbers ready for adding. Then add the two numbers together. (90)
   Add 54 and 23. Add 15 and 72. Add 52 and 31.
7. Copy the numbers ready for subtracting. Then find the difference. (91)
   Subtract 24 from 75. Subtract 41 from 89.
8. Copy. Find the sums. (92)

125	613	255	423	541	333	734
+623	+273	+532	+156	+421	+516	+224

9. Copy. Find the differences. (93)

794	563	879	963	639	327	462
−273	−431	−365	−742	−128	−215	−321

How Well Are You Doing?

Use folded paper. Write the sums.

1.	8	9	7	5	7	5	5	3
	+3	+2	+6	+7	+8	+4	+3	+4
2.	8	6	6	3	7	7	2	8
	+8	+8	+4	+7	+2	+7	+4	+4
3.	8	6	4	9	8	6	9	3
	+5	+6	+2	+3	+2	+2	+7	+2

Use folded paper. Write the differences.

4.	15	8	13	7	17	10
	−6	−4	−4	−2	−9	−5
5.	11	6	18	9	14	11
	−7	−3	−9	−3	−9	−5

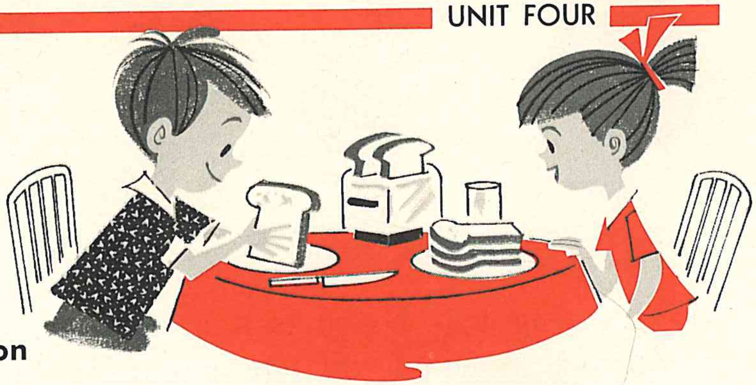
6. Tom counted 45 pencils in a box. He had 14 pencils in his hand. He put all the pencils together. How many were there in all?

7. Jerry needed 75 box tops to get a prize. He now has 62 box tops. How many more box tops must he get?

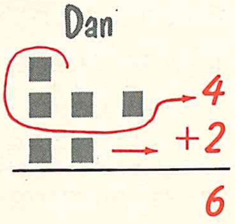
8. Tom had 124 marbles in a bag. He found 125 marbles in a box. Together he had how many marbles?

9. There are 345 pages in a book. Don has read 214 pages. How many pages must he read to finish the book?

UNIT FOUR

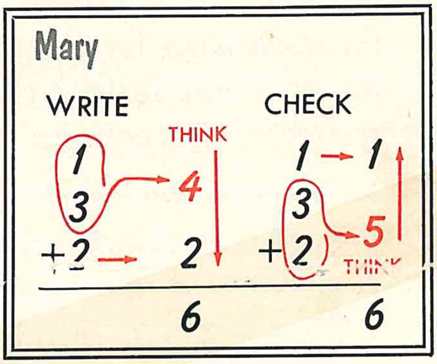


Column Addition



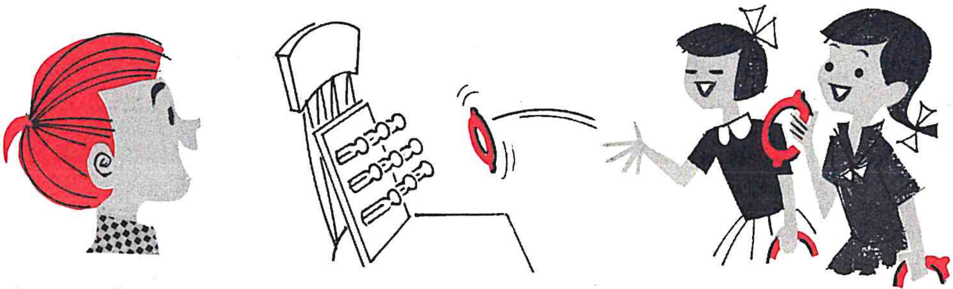
1. Dan has 1 slice of toast. There are 3 slices on the plate and 2 slices in the toaster. How many slices of toast are there?
2. Dan counted the slices. He said there were 6 slices. Count the squares. Is his sum correct?
3. Mary used numbers. She wrote 1, 3, and 2 as shown. This is called writing numbers in a column.

   To add, Mary began at the top of the column. She thought, "1 + 3 = 4; 4 + 2 = 6." She wrote 6 at the bottom of the column. To check she began at the bottom of the column. She thought, "2 + 3 = 5; 5 + 1 = 6." Mary knew her answer was right. She got the same sum adding down or up.

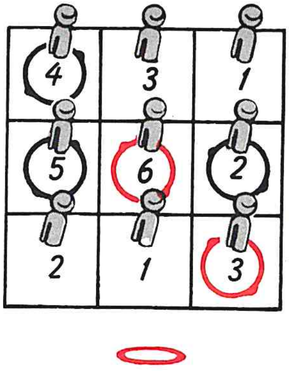


4. Copy the numbers in a straight column. Add.

   3 + 4 + 2 = ▢   5 + 2 + 2 = ▢   4 + 6 + 2 = ▢

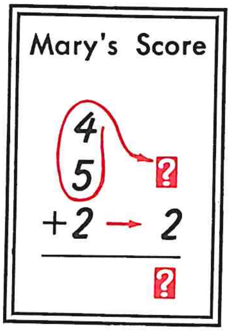


Scores for a Ring Toss Game



This ring toss board is a piece of cardboard marked off in squares. Each square has a number. A clothes pin is pushed through the cardboard above each number. The rings are red and black fruit jar rubbers.

In playing ring toss, the score is the sum of the numbers a player rings. At each turn he can toss three rings. When a ring falls to the floor, he must write 0 in his column of figures.



1. Mary tossed the black rings. What numbers did she ring? Find her score.
2. Joe tossed the red rings. His score will be 6 + 0 + 3. Find his score.
3. Find the scores for these children.

Don	Tom	Sue	Ann	Bill	Jane	Ray	Greg
5	4	3	4	5	2	4	3
3	4	0	5	5	4	3	5
+2	+1	+4	+0	+2	+6	+5	+4

4. Make different columns of figures from the game board. Have 3 figures in each column. Add.

Column Addition with Two-Figure Numbers

1. Bob picked 42 apples. Ann picked 13 apples. Tom picked 34 apples. How many did they pick in all?

To find how many, add 42, 13, and 34. Write the numbers in straight columns.

Add the ones first. Add down. Think, "2 ones and 3 ones are 5 ones. 5 ones and 4 ones are 9 ones." Write 9 in ones place in the sum.

Add the tens. Think, "4 tens and 1 ten are 5 tens. 5 tens and 3 tens are 8 tens." Write 8 in tens place in the sum. The sum is 89.

To check, begin at the bottom of the columns and add up.

ADD

tens	ones
4	2
1	3
+3	4
8	9

CHECK

42
13
+34
89

2. Copy. Add. Check.

52	53	42	33	23	32	21	24
21	12	16	34	30	25	24	55
+14	+34	+20	+22	+42	+41	+43	+20

3. Copy in straight columns. Add. Check.

42 + 26 + 21 = ⍰
26 + 51 + 12 = ⍰
25 + 22 + 50 = ⍰
72 + 16 + 10 = ⍰
45 + 20 + 31 = ⍰

63 + 10 + 25 = ⍰
55 + 14 + 20 = ⍰
31 + 43 + 12 = ⍰
54 + 21 + 12 = ⍰
32 + 25 + 20 = ⍰

20 + 45 + 23 = ⍰
43 + 10 + 15 = ⍰
48 + 40 + 11 = ⍰
62 + 25 + 10 = ⍰
33 + 33 + 33 = ⍰

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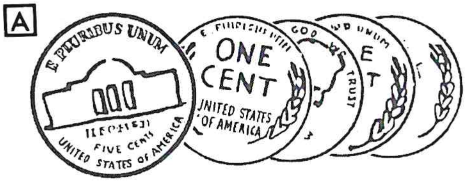

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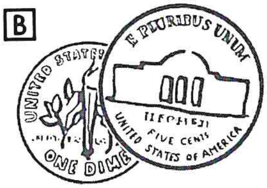

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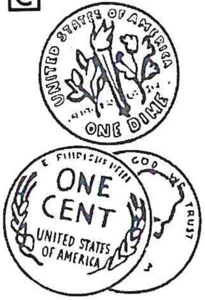

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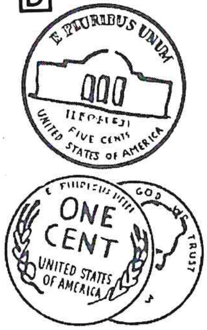


Adding or Putting Money Together

■ **The sign ¢ means "cent" or "cents." Read the sign as "cents" in numbers larger than 1, as "2¢, 15¢."**

1. Joe had 7¢ in his bank. Which group shows Joe's money?
2. Carol paid 9¢ for postage stamps. Which group shows what Carol paid?
3. The grocer gave Jack 12¢ in change. Which group shows Jack's change?
4. Jerry bought an eraser and a pencil. In all he spent 15¢. Which group shows what he spent?
5. Don spent 4¢ for candy and 12¢ for marbles. How much did he spend in all?

   Picture C shows that 12¢ is ▨ tens and ▨ ones. To add 4¢ and 12¢ write 4 in the ones column. Add.

6. Draw pennies. Show that 4¢ and 12¢ is 16¢. Show that 12¢ and 4¢ is also 16¢.
7. Copy. Write ones under ones. Add.

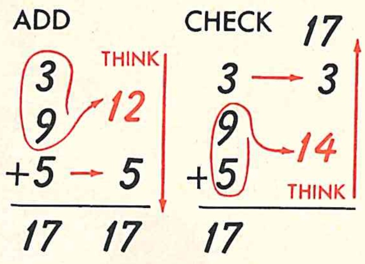
tens	ones
1	2¢
+	4¢
1	6¢

or

tens	ones
	4¢
+1	2¢
1	6¢

13¢ + 3¢　15¢ + 4¢　6¢ + 11¢　5¢ + 14¢　2¢ + 16¢
3¢ + 15¢　11¢ + 6¢　14¢ + 5¢　3¢ + 13¢　4¢ + 15¢

An Important Use for Addition Facts



In adding down, we see that the sum of 3 and 9 is 12, an addition fact that you have already learned. The sum of 12 and 5 is 17.

Knowing the addition fact 2 + 5 = 7 helps you to add 12 and 5.

In checking, we find the sum of 5 and 9 is 14, an addition fact you already know. The sum of 14 and 3 is 17. Knowing the addition fact 4 + 3 = 7 helps you add 14 and 3.

Say or write the sums.

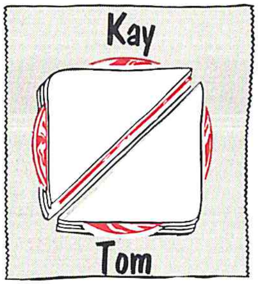
1.	17 +2	16 +1	15 +4	12 +5	14 +2	13 +6	18 +1	14 +3
2.	9 8 +2	7 9 +1	8 7 +4	6 6 +5	8 6 +2	9 4 +6	9 9 +1	9 5 +3
3.	10 +7	11 +4	13 +3	15 +4	17 +2	14 +4	12 +7	17 +2
4.	6 4 +7	7 4 +4	4 9 +3	6 9 +4	9 8 +2	5 9 +4	7 5 +7	8 9 +2
5.	7 6 +5	5 6 +7	8 5 +6	6 8 +5	7 9 +3	8 7 +4	6 9 +2	3 9 +7

Cutting Wholes into Equal Parts

The teacher took some children on a hike. Tom forgot to bring his lunch. Kay gave Tom a part of her sandwich.

1. Kay cut her sandwich into two parts. Were the two parts the same size? That is, were the two parts equal?

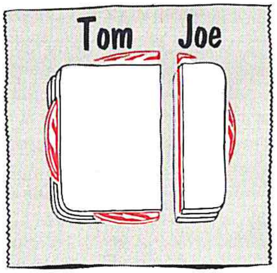
Kay's Sandwich



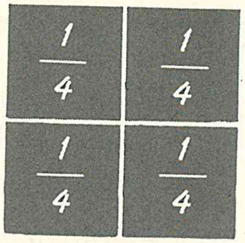
■ **When anything is made into two equal parts, one of the parts is one half of it. Another way to write one half is $\frac{1}{2}$.**

2. Did Kay give Tom one half of her sandwich?
3. Joe cut his sandwich into two parts. Were the parts equal?
4. Did Joe give Tom exactly one half of his sandwich? Why?

Joe's Sandwich



5. Bill broke his candy bar into four equal parts. Tom ate one of the equal parts. What part of the candy bar did Tom eat?



■ **When anything is made into four equal parts, one of the parts is one fourth of it. Another way to write one fourth is $\frac{1}{4}$.**

■ **One fourth is sometimes called a quarter.**

6. Jane gave Tom a whole apple. Which picture shows the whole apple that Jane gave to Tom?

7. Tom cut the whole apple into halves. Find two pictures that show a whole apple cut into halves.

8. Betty had an apple, too. She cut her apple into fourths. Point to $\frac{1}{4}$ of Betty's apple.

9. Which picture shows that two halves put together are the same as one whole?

■ **One half and one half = one whole.**

10. Betty ate $\frac{1}{4}$ of her apple. Cover $\frac{1}{4}$ of the apple in picture C. Count the fourths that are not covered.

■ **Another way to write three fourths is $\frac{3}{4}$.**

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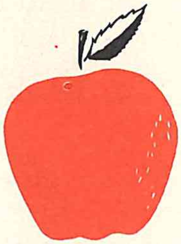

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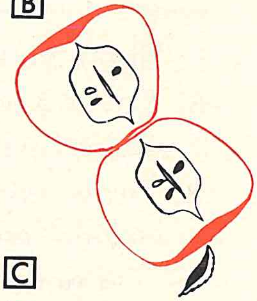
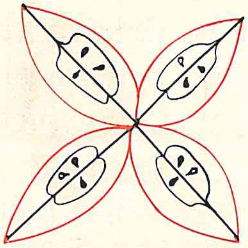


C



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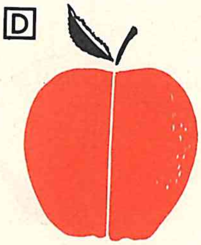
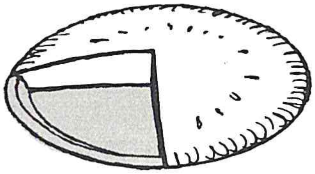
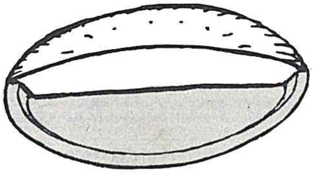


More About Halves and Fourths

1. Fold a small sheet of paper into halves. Color one half red. Color the other half blue.
2. Fold another small sheet of paper into fourths. Color $\frac{1}{4}$ yellow, $\frac{1}{4}$ blue, $\frac{1}{4}$ red, and $\frac{1}{4}$ green.
3. Fold another small sheet of paper into fourths. Color $\frac{1}{4}$ red. Color the other $\frac{3}{4}$ blue.
4. Look at these pies. What part of each pie is gone?

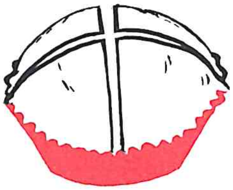


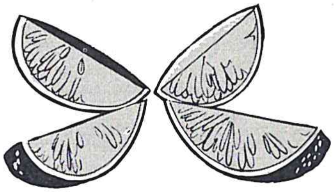


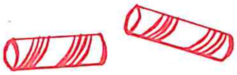
5. Show your teacher $\frac{1}{2}$ of your lead pencil.
6. Cover $\frac{1}{2}$ of this page.
7. Draw a circle on the blackboard. Mark it into halves.
8. Draw each of these on the blackboard. Mark, or divide, each into fourths:

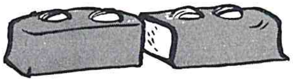
   a pencil   a handkerchief   a pie

9. Draw a glass that is $\frac{1}{2}$ full of milk.
10. Draw a glass that is $\frac{1}{4}$ full of milk.
11. What pictures on this page show things divided into fourths?
12. What pictures on this page show things divided into halves?









Dividing a Whole into Thirds

1. Alice, Joan, and Mary had a piece of ribbon. They each wanted an equal part of the ribbon. Into how many equal parts must the ribbon be cut?

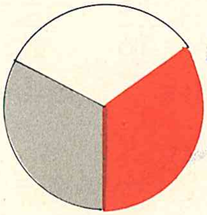
Before cutting the ribbon, Alice folded it into three equal parts in this way. She folded the end of the ribbon over so that the folded piece was exactly one half of the rest of the ribbon.

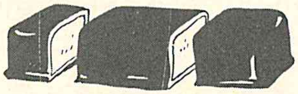
Then she folded the other end back to make three equal pieces, or three thirds.

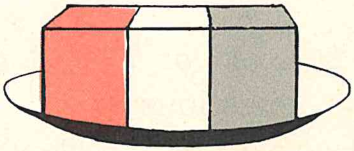
2. What part of the whole ribbon did each girl get?

🟥 **When anything is divided into three equal parts, one of the parts is one third of it. Another way to write one third is $\frac{1}{3}$.**

3. Which things shown below are cut into thirds?
4. Is the candy bar cut into thirds? Why?







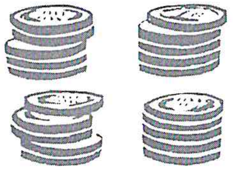
Helpful Things for You to Know

1. Count by 2's to 100. Begin, "2, 4, 6," and go on.
2. Joe had 50 pennies. He counted them a short way. He counted them by 2's. Write the numbers Joe thought as he counted.
3. 2 + 2 + 2 + 2 = ? Think, "●● + ●● + ●● + ●● = ?"
4. Add. Draw dots to show your addition is right.

   2 + 2 + 2 + 2 + 2 = ?   2 + 2 + 2 = ?

5. How much is three 2's? Four 2's? Five 2's?
6. Count by 5's to 100. Begin, "5, 10," and go on.
7. Jim counted his pennies a short way. He put 5 pennies in each stack. Count Jim's pennies.

Jim's Pennies



8. A nickel is the same as 5¢. Ann has 5 nickels. How many cents has she? 5¢ + 5¢ + 5¢ + 5¢ + 5¢ = ?
9. Count by 10's to 100.
10. A dime is the same as 10¢. Bill has 5 dimes. How many cents has he? 10¢ + 10¢ + 10¢ + 10¢ + 10¢ = ?

■ **In addition doubles, the numbers you add are the same. That is, you add two equal numbers.**

11. Be sure you know these doubles.

2	3	4	5	6	7	8	9
+2	+3	+4	+5	+6	+7	+8	+9
4	6	8	10	12	14	16	18

12. Look at the doubles and answer these number questions:

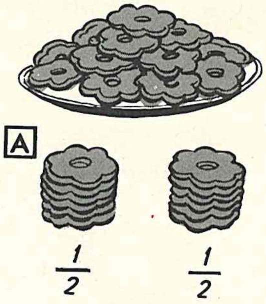
Two 5's = ?   Two 9's = ?   Two 2's = ?   Two 6's = ?

One Half and One Fourth of a Group

1. Don and Mary had 12 cookies. Each wanted one half, or the same number, of cookies. How many did each get?

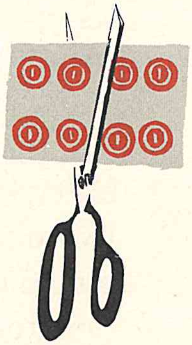
Don said he would put the cookies in two groups. He would put the same number of cookies in each group. That would make the groups equal.

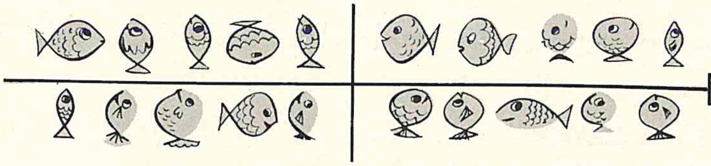
A



■ **When a group of things is made into two equal groups or parts, each part is called one half.**

B



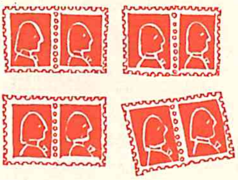


C

2. Four boys caught 20 fish. Each boy wanted one fourth, or the same number of fish. How many did each boy get?

Bob drew four places in the sand. He put a fish in each place until all the fish were in groups. Count the fish. Are the groups equal?

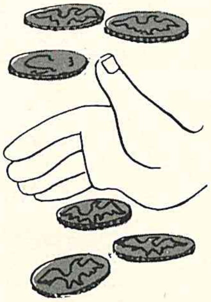
D



■ **When a group of things is made into four equal groups or parts, each part is called one fourth.**

3. Which pictures show a group of things being made into 4 equal groups? Into 2 equal groups?

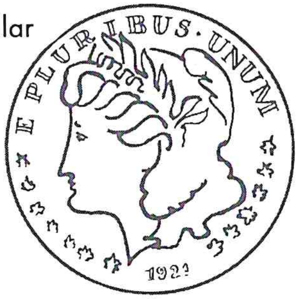
E



Larger Coins

1. Bob saved 100 pennies. His father gave him one dollar for his pennies. If you were Bob, which would you take, the silver dollar, or the paper dollar? Why?

Silver Dollar

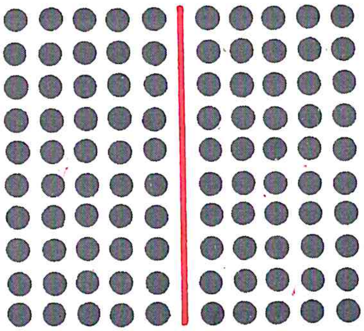


A Small Picture of a Paper Dollar

THE UNITED STATES OF AMERICA
V 84585184 H
ONE DOLLAR
1

2. Mary had 100 pennies. She made the 100 pennies into two equal groups. How many pennies were there in one of the equal groups? One half ($\frac{1}{2}$) of 100 pennies is how many pennies?

One Dollar

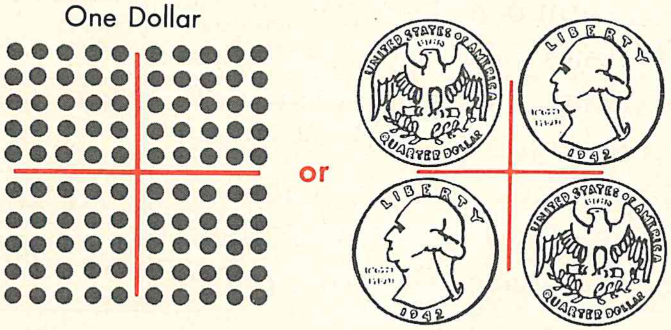


or

3. A half dollar is worth how many cents? How many half dollars will Mary get for her 100 pennies?
4. Sometimes a half dollar is called a 50-cent piece. How do you think it got this name?

5. Joe had 100 pennies. He said it was too much trouble to count 100 coins. He asked his father to give him two silver coins for the 100 pennies. What two coins did Joe want?

6. Joe's father said he could give Joe only quarters, or 25-cent pieces. How many pennies is a quarter worth? How many quarters will Joe get for his 100 pennies? The picture will help you.



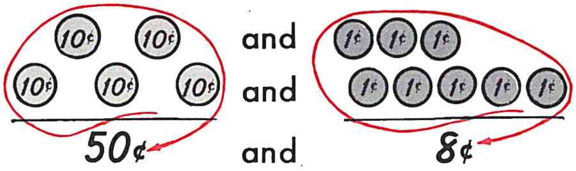
■ **One dollar, or 100¢, is usually written $1.00. The sign $ is the dollar sign. The dot is always written between dollars and cents. You may call it the cents point.**

7. To read the cents point, say "and" if there are dollars and cents in the number. To read $5.15, say, "Five dollars and fifteen cents." To read $0.15 say, "Fifteen cents." Read the price tags on this page.

Books	10¢
Toys	$1.00
Dresses	$8.50
Caps	$2.98
Gloves	$.49
Cakes	25¢
Shoes	$4.00
Ball	$0.05

Adding Your Money

1. Bob had 23¢. He earned 35¢. How much did he have in all? Bob answered the addition question by counting his money.



or 23¢
or 35¢
or 58¢

Then Bob thought of a shorter way. He wrote the amounts of money ready for adding. He added the ones first. He thought, "3 ones and 5 ones are 8 ones." He wrote 8 in ones place. Then he thought, "2 tens and 3 tens are 5 tens." He wrote 5 in tens place. He wrote ¢ after the sum.

Bob

tens	ones
2	3¢
+3	5¢
5	8¢

2. Use the short way. Find the sum of forty-five cents and thirty-three cents.

Copy and add. Add the ones first.

3.							
	52¢	34¢	75¢	41¢	66¢	63¢	26¢
	+35¢	+45¢	+13¢	+56¢	+33¢	+24¢	+52¢

How much must you pay when you buy:

4. A cap costing 75¢ and socks costing 23¢?
5. A 15¢ sundae and a 23¢ tube of tooth paste?
6. A 40¢ brick of ice cream and a 15¢ magazine?
7. A tie worth 75¢ and a handkerchief for 13¢?

Subtracting Money

1. Joan had 65¢. She spent 41¢. How much should she have left? Joan found the answer this way:

Joan 65¢ = 6 dimes and 5 cents
−41¢ = −4 dimes and 1 cent
2 dimes and 4 cents or 24¢

Then Joan saw there was a shorter way. She wrote the amounts of money ready for subtracting.

She subtracted the ones first. She thought, "1 one from 5 ones is 4 ones." She wrote 4 in ones place. Then she thought, "4 tens from 6 tens is 2 tens." She wrote 2 in tens place. She wrote ¢ after her answer.

tens	ones
6	5¢
−4	1¢
2	4¢

2. Use the short way. Take twenty-three cents from eighty-nine cents.
3. Copy. Write answers. Begin by subtracting the ones first.

98¢	78¢	64¢	77¢	86¢	98¢	95¢
−45¢	−54¢	−23¢	−25¢	−53¢	−73¢	−32¢

How much will you have left if:

4. You have 75¢ and you lose 13¢?
5. You have 49¢ and you pay 35¢ for a book?
6. You have 98¢ and you give your mother 25¢?
7. You have 85¢ and you spend 40¢?

Addition Races

Read the directions for the addition races on page 94. Do these races in exactly the same way. Check the answers for each race before going to the next race. Which team wins?

Race 1. Ready! Go!

Write the sums on folded paper.

1.	7	6	5	8	9	0	4
	6	5	7	3	0	6	8
	+4	+7	+6	+8	+4	+9	+7

2.	36	70	63	46	27	12
	+43	+29	+32	+42	+51	+65

3.	57¢	84¢	76¢	53¢	67¢	24¢
	+20¢	+15¢	+23¢	+44¢	+21¢	+53¢

Race 2. Ready! Go!

Write the sums on folded paper.

1.	7	5	4	8	6	9	5
	5	8	6	6	7	5	8
	+5	+4	+9	+4	+5	+3	+2

2.	23	41	30	42	53	51
	52	32	24	14	21	16
	+14	+26	+33	+21	+15	+32

Race 3. Ready! Go!

Write the answers on folded paper.

1.	92¢	89¢	56¢	71¢	48¢	60¢
	−51¢	−74¢	−20¢	−41¢	−26¢	−30¢

2.	378	534	876	513	862
	−153	−434	−106	−310	−400
3.	658	327	755	529	435
	−436	−205	−222	−119	−214

Race 4. Ready! Go!

Write the answers.

1.	9 + 6	7 + 8	5 + 7	6 + 8
2.	9 + 7	6 + 9	5 + 8	7 + 9
3.	8 + 5	6 + 7	8 + 7	4 + 9
4.	13 − 9	17 − 8	14 − 6	11 − 4
5.	12 − 7	13 − 4	14 − 9	14 − 5
6.	13 − 6	15 − 7	17 − 9	13 − 4

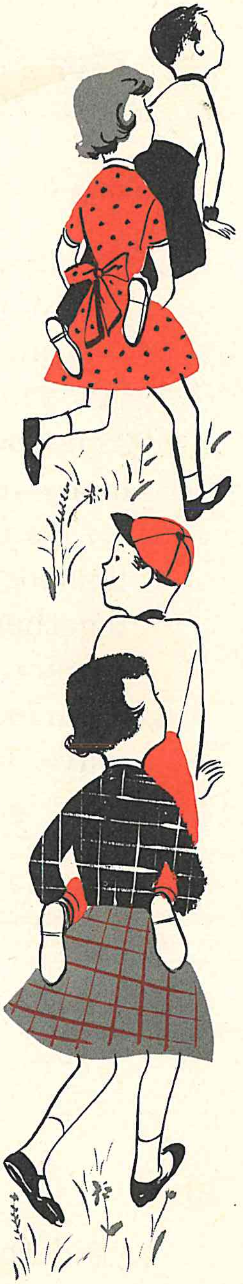
Race 5. Ready! Go!

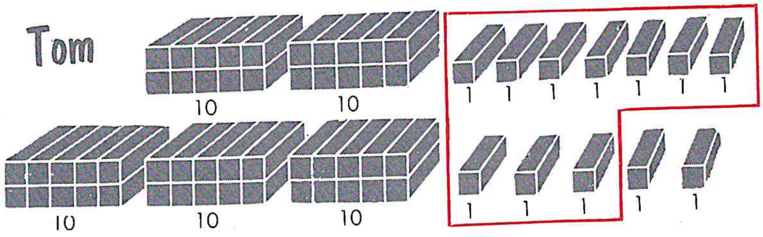
Copy neatly in straight columns and add.

1. 6, 2, 7
2. 6, 7, 3
3. 5, 4, 6
4. 26, 52, 71
5. 23, 40, 26
6. 50, 20, 18

Subtract.

7. 165 from 586
8. 235 from 467
9. 463 from 783
10. 434 from 765
11. 462 from 784
12. 301 from 931





Making a Ten from Ten Ones

1. The teacher had 27 red pencils and 35 yellow pencils. How many pencils did she have in all?

Tom used tens blocks and ones blocks to answer this addition question. How did Tom show 27 pencils? 35 pencils? How many ones blocks were there? How many tens blocks were there?

Tom looked at the blocks. He decided to put all the tens together. He put the ten ones shown in the frame together. How many tens did he then have? How many ones? What was his answer?

2. John looked at Tom's blocks. John thought of a shorter way. He used numbers and words.

John 27 or 2 tens and 7 ones
+35 +3 tens and 5 ones
5 tens and 12 ones

John saw that 12 ones = 1 ten and 2 ones. Then he wrote:

5 tens
+1 ten and 2 ones
6 tens and 2 ones The answer is 62.

3. Did Tom and John get the same answer?

4. Jane looked at John's work. She said John did not need to write ones and tens. She said he could think these words as he added. She used only numbers.

THINK

Jane

$$\begin{array}{rrl} \text{tens} & \text{ones} & \\ 2 & 7 & \\ +3 & 5 & \\ \cline{1-2} 1 & 2 & (7 + 5 = 12 \text{ or } 1 \text{ ten and } 2 \text{ ones}) \\ +5 & 0 & (20 + 30 = 50 \text{ or } 5 \text{ tens}) \\ \cline{1-2} 6 & 2 & \end{array}$$

5. Jim used the easiest way of all. Instead of writing 12 ones, he wrote 2 in ones place. He wrote the 1 ten at the top of tens column. Then he added the 1 ten with the other tens.

Jim

$$\begin{array}{rr} \text{tens} & \text{ones} \\ \text{①} & \\ 2 & 7 \\ +3 & 5 \\ \hline 6 & 2 \end{array}$$

▶ Copy. Find the sums the way Jim did.

6.
$$\begin{array}{rrrrrrrr} 24 & 56 & 73 & 15 & 64 & 36 & 83 & 47 \\ +59 & +28 & +19 & +66 & +29 & +59 & +17 & +37 \\ \hline \end{array}$$

7.
$$\begin{array}{rrrrrrrr} 14 & 36 & 34 & 47 & 49 & 37 & 58 & 27 \\ +59 & +55 & +57 & +38 & +26 & +59 & +22 & +57 \\ \hline \end{array}$$

8.
$$\begin{array}{rrrrrrrr} 48 & 39 & 27 & 58 & 67 & 45 & 76 & 29 \\ +39 & +25 & +69 & +38 & +26 & +48 & +16 & +58 \\ \hline \end{array}$$

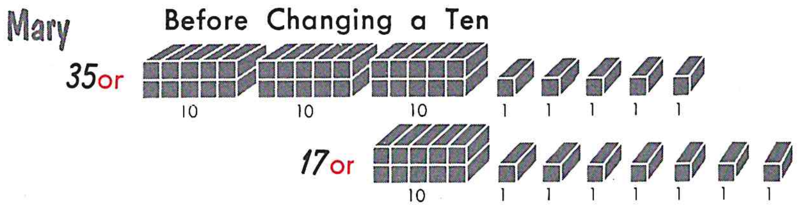
9.
$$\begin{array}{rrrrrrrr} 66 & 42 & 55 & 37 & 73 & 56 & 69 & 24 \\ +24 & +29 & +35 & +48 & +18 & +29 & +37 & +56 \\ \hline \end{array}$$

Changing a Ten to Ones

1. A girl needed 35 candles for her mother's birthday cake. She had 17 candles. How many more candles must she get?

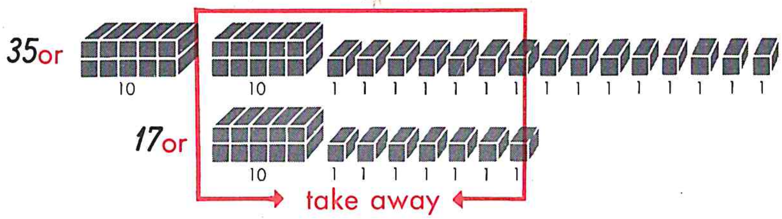
Mary used tens and ones blocks to begin this subtraction. How did she show 35 candles? 17 candles?

Before Changing a Ten



Mary began by subtracting the ones. She found she could not take 7 ones from 5 ones. She took a tens block from the 3 tens. She made it into 10 ones.

After Changing a Ten



Mary looked at her blocks. She wrote what she saw there.

$$\begin{array}{r} 35 \\ -17 \\ \hline \end{array} \quad \text{or} \quad \begin{array}{rlrl} \overset{2}{\cancel{3}} & \text{tens and} & \overset{15}{\cancel{5}} & \text{ones} \\ -1 & \text{ten and} & 7 & \text{ones} \\ \hline 1 & \text{ten and} & 8 & \text{ones or } 18 \end{array}$$

2. Point to the blocks that show Mary's answer. Count the blocks. Is her answer right?

3. Billy subtracted in an all-number way. He wrote 17 under 35. He saw he could not take 7 from 5. He changed a ten into 10 ones. Where did he put the 10 ones? How did he show that he had changed it from his 3 tens? Explain the rest of his subtraction.

Billy

$$\begin{array}{rr} \overset{2}{\cancel{3}} & \overset{10}{5} \\ -1 & 7 \\ \hline 1 & 8 \end{array}$$

Some children do not have to write the figures Bill wrote in red. They think and remember these numbers. Read the next problem. Then look at Alice's work.

4. Mr. Dolan is 27 years old. His uncle is 63 years old. What is the difference in their ages?

Write 27 under 63, and subtract. You cannot take 7 from 3. Think of 63 as 5 tens and 13 ones. Think, "7 ones from 13 ones is 6 ones," and write 6 under 7. Think, "2 tens from 5 tens is 3 tens," and write 3 under 2. The answer is 36.

Alice

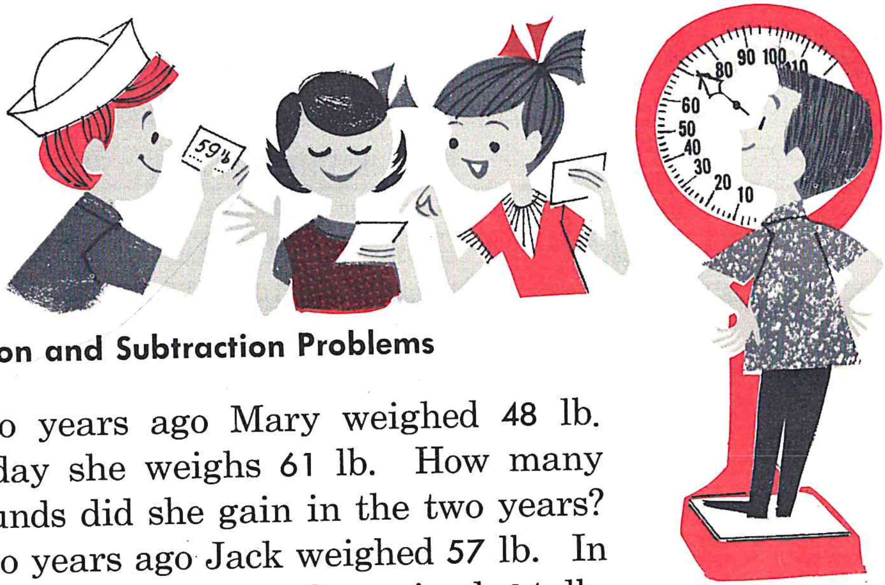
$$\begin{array}{rcrr} \text{WRITE} & & \text{THINK} & \\ 63 & = & 5 & 13 \\ -27 & = & -2 & 7 \\ \cline{1-1}\cline{3-4} 36 & & 3 & 6 \end{array}$$

5. Mr. Smith is 36 years old. His uncle is 65 years old. What is the difference in their ages?

6. Copy. Subtract as either Billy or Alice did.

$$\begin{array}{r} 54 \\ -26 \\ \hline \end{array} \quad \begin{array}{r} 71 \\ -39 \\ \hline \end{array} \quad \begin{array}{r} 86 \\ -67 \\ \hline \end{array} \quad \begin{array}{r} 63 \\ -18 \\ \hline \end{array} \quad \begin{array}{r} 95 \\ -46 \\ \hline \end{array} \quad \begin{array}{r} 37 \\ -19 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ -22 \\ \hline \end{array} \quad \begin{array}{r} 34 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ -48 \\ \hline \end{array} \quad \begin{array}{r} 58 \\ -29 \\ \hline \end{array} \quad \begin{array}{r} 76 \\ -38 \\ \hline \end{array} \quad \begin{array}{r} 93 \\ -26 \\ \hline \end{array} \quad \begin{array}{r} 64 \\ -35 \\ \hline \end{array} \quad \begin{array}{r} 41 \\ -23 \\ \hline \end{array} \quad \begin{array}{r} 55 \\ -37 \\ \hline \end{array} \quad \begin{array}{r} 87 \\ -28 \\ \hline \end{array}$$



Addition and Subtraction Problems

1. Two years ago Mary weighed 48 lb. Today she weighs 61 lb. How many pounds did she gain in the two years?
2. Two years ago Jack weighed 57 lb. In the past two years he gained 14 lb. What does he weigh now?
3. Sue weighs 54 lb. Jim weighs 71 lb. Jim weighs how many more pounds than Sue?
4. The largest boy in Tom's class weighs 17 lb. more than Tom. Tom weighs 59 lb. What does the large boy weigh?
5. The largest girl in Joan's class weighs 73 lb. Joan weighs 55 lb. Joan weighs how many pounds less than the large girl?
6. Find out your own weight if you can. Do you weigh more than Tom? Do you weigh less than Joan?

▶ Copy. Find the answers. Watch the signs!

7.	48 −26	34 +49	57 +27	63 −17	49 −39	26 +57	38 +52	19 +78
8.	61 −29	75 −38	98 −59	67 +28	46 −19	31 +14	82 −53	54 −37

Addition and Subtraction Practice

1. Add 9 to each number. Write only the sums.

4 1 7 8 6 9 2 0 5 3

2. Add each number to 18. Write only the sums.

7 2 6 1 9 3 8 5 0 4

▶ Copy. Write the answers.

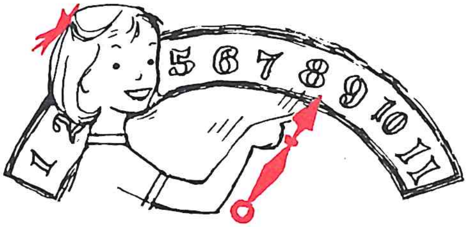
3.	48	29	35	48	16	23	46	29
	+17	+43	+19	+28	+39	+19	+38	+47
4.	39	63	78	27	38	29	48	39
	+35	+18	+16	+54	+29	+16	+34	+59
5.	36	29	57	32	68	15	47	57
	+17	+48	+25	+39	+25	+16	+36	+28

6. Take turns. See how quickly you can give the answers for different rows of subtractions.

▶ Copy. Write the answers.

7.	77	49	89	85	86	85	97	83
	−46	−24	−72	−50	−54	−12	−65	−32
8.	73	82	96	52	73	91	83	54
	−46	−42	−51	−14	−41	−33	−28	−37
9.	76	39	45	37	46	36	56	74
	−18	−27	−28	−17	−24	−16	−19	−39
10.	72	83	65	53	58	75	94	81
	−24	−25	−41	−34	−23	−27	−56	−54

How Well Have You Learned?



Do your very best. Your right answers will tell you how far you turned the pointer on the dial.

1. Use figures. Write one half; one fourth; three fourths. (104, 105)
2. Draw a candy bar. Make one half of it black. (106)
3. Draw a large round cooky. Draw lines to show the cooky marked off in fourths. (106)
4. John has a half dollar. How many cents has he? (110)
5. Joe had 31¢. His mother gave him 25¢, or a quarter. How many cents did he then have? (112)
6. Jerry had 75¢. He spent 51¢. How much did he have left? (113)
7. Write $3.98 in words. (111)
8. Add 5¢ and 24¢. (102)
9. Copy in a column. Add. (99, 101, 103)

   $4 + 2 + 3 = \boxed{?}$ $7 + 5 + 6 = \boxed{?}$ $23 + 52 + 14 = \boxed{?}$

10. Copy and add. (116, 117)

26	37	46	69	74	25	49	19
+59	+45	+36	+25	+18	+38	+47	+29

11. Copy and find the differences. (118, 119)

36	71	55	83	91	67	41	76
−18	−26	−39	−56	−45	−39	−22	−28

Helping Yourself

Find the answers. Study the helping pages if you make mistakes.

1. These are the scores some of the children made shooting arrows. Find the total score each made. (99, 100)

Jack	Cora	Tom	Jane	Sam	Ruth	Joe	Ann	Bob
4	3	4	5	5	6	4	3	5
2	6	3	2	4	2	3	1	3
+5	+3	+4	+6	+2	+5	+5	+6	+4

2. Copy. Add. (103)

7	4	8	6	9	5	3	2
5	9	8	7	9	8	9	9
+4	+3	+2	+5	+1	+6	+7	+6

3. Write six dollars and 45 cents using the dollar sign and figures. (111)
4. Work with a partner. See how fast you can say the sums for the 100 addition facts. (88)
5. Work with a partner. See how fast you can answer the subtraction questions on your helper cards. (89)
6. Copy. Find the sums. (116, 117)

28	45	59	36	44	25	17	49
+35	+19	+26	+45	+28	+39	+18	+27

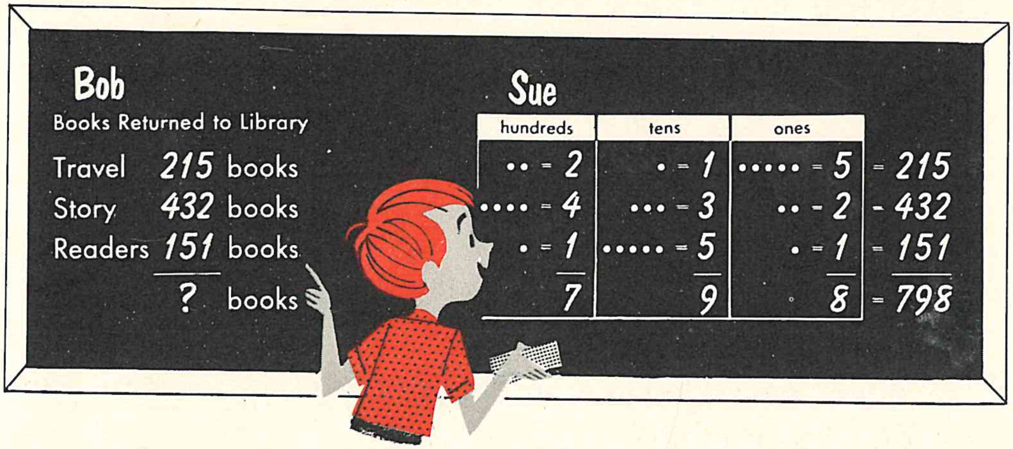
7. Copy. Find the differences. (118, 119)

64	83	31	95	76	57	46	62
−26	−37	−13	−78	−39	−28	−17	−24

How Well Are You Doing?

Frank and Joan were helping the teacher clean the cupboards. Can you work the problems they did?

1. There were 39 pieces of chalk in one box. There were 48 pieces in another box. The children put all the chalk together. How many pieces were there in all?
2. They counted 72 pencils in a box. The teacher took 29 pencils for the class to use. How many pencils were left?
3. Joan counted 35 yellow crayons and 19 red crayons. There were how many more yellow than red crayons?
4. There were 29 small erasers in a box, and 28 small erasers on a shelf. Frank put them together in a box. How many were in the box?
5. Joan found 7 pairs of large scissors, 6 pairs of middle-sized scissors, and 5 pairs of small scissors. How many pairs were there in all?
6. Frank counted 24 sheets of green paper, 52 sheets of red paper, and 13 sheets of blue paper. How many sheets of paper did this make in all?
7. Joan found a jar of paste that was half full. Frank found a jar that was one fourth full. Which jar had the more paste in it?



Column Addition with Three-Figure Numbers

1. Bob works in the library. He must report how many books are returned each week. At first he did not know how to add columns with three-figure numbers. Explain what Sue did to help Bob with his addition.

2. When Bob understood what Sue's work meant, he said, "Adding three-figure numbers is the same as adding columns of one-figure numbers. The difference is you must think ones, tens, and hundreds as you add." How did Bob show this in his addition?

		hundreds	tens	ones
Bob		2	1	5
		4	3	2
	+	1	5	1
		7	9	8

3. Copy. Add. Begin by adding ones first.

324	135	431	213	433	246
253	421	124	453	214	531
+122	+232	+232	+213	+321	+212

Adding by Endings Will Help Your Addition

1. How are the first three additions alike? How are the next three additions alike?

12	22	32	16	26	36
+5	+5	+5	+3	+3	+3
17	27	37	19	29	39

2. When 5 is added to a number ending in 2, the sum ends in what number?
3. When 3 is added to a number ending in 6, the sum ends in what number?

No Pencils, Please!

Keep endings in mind. Add.

4.	27	17	57	37	54	74	44	64
	+2	+2	+2	+2	+5	+5	+5	+5
5.	13	53	73	23	26	76	96	56
	+4	+4	+4	+4	+2	+2	+2	+2
6.	16	18	25	10	12	31	43	54
	+2	+1	+3	+1	+4	+1	+1	+3
7.	33	37	12	51	37	82	61	24
	+6	+2	+2	+2	+1	+3	+6	+5
8.	41	13	52	44	63	21	35	16
	+5	+4	+7	+2	+5	+5	+4	+1
9.	412	632	224	350	631	523	715	654
	+4	+5	+4	+2	+8	+6	+2	+3

Adding Harder Endings

Study the additions.

$$\begin{array}{r} 7 \\ +5 \\ \hline 12 \end{array} \quad \begin{array}{r} 17 \\ +5 \\ \hline 22 \end{array} \quad \begin{array}{r} 27 \\ +5 \\ \hline 32 \end{array} \qquad\qquad \begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array} \quad \begin{array}{r} 16 \\ +8 \\ \hline 24 \end{array} \quad \begin{array}{r} 26 \\ +8 \\ \hline 34 \end{array}$$

Say the missing numbers in 1 and 2 below.

1. When 5 is added to a number ending in 7, the sum ends in ?. The figure in tens place is ? greater in the sum than in the number.
2. When 8 is added to a number ending in 6, the sum ends in ?. The figure in tens place is ? greater in the sum than in the number.
3. What will the ending be if you add 9 to a number ending in 5? What is true of the tens figures in the sum and in the number?
4. Say and write the sums.

$$\begin{array}{r} 5 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 15 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 25 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 35 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 45 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 55 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 65 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 75 \\ +9 \\ \hline \end{array}$$

5. What will the ending be if you add 7 to a number ending in 9? What is true of the tens figures?
6. Say and write the sums.

$$\begin{array}{r} 9 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 19 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 29 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 39 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 49 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 59 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 69 \\ +7 \\ \hline \end{array} \quad \begin{array}{r} 79 \\ +7 \\ \hline \end{array}$$

7. What will the ending be if you add 9 to a number ending in 1? What is true of the tens figures?

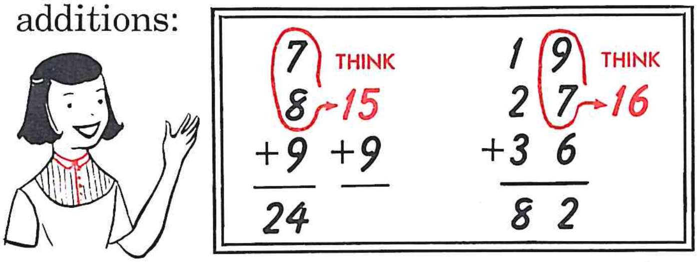
More Adding by Endings

Give a rule for the ending. Give a rule for finding the tens figure in the sum.

1.	26	19	27	22	34	15	38	47
	+7	+5	+8	+9	+8	+8	+3	+5

2.	127	423	532	319	635	128	716	357
	+8	+8	+9	+4	+7	+5	+6	+9

Tell how thinking of endings helps in these additions:



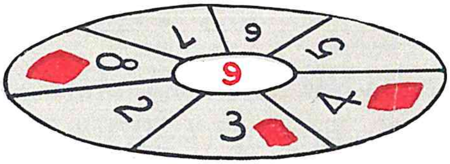
Copy. Add.

3.	7	4	2	18	16	27	55	39
	9	9	8	39	15	59	18	26
	+2	+4	+8	+27	+49	+16	+19	+18

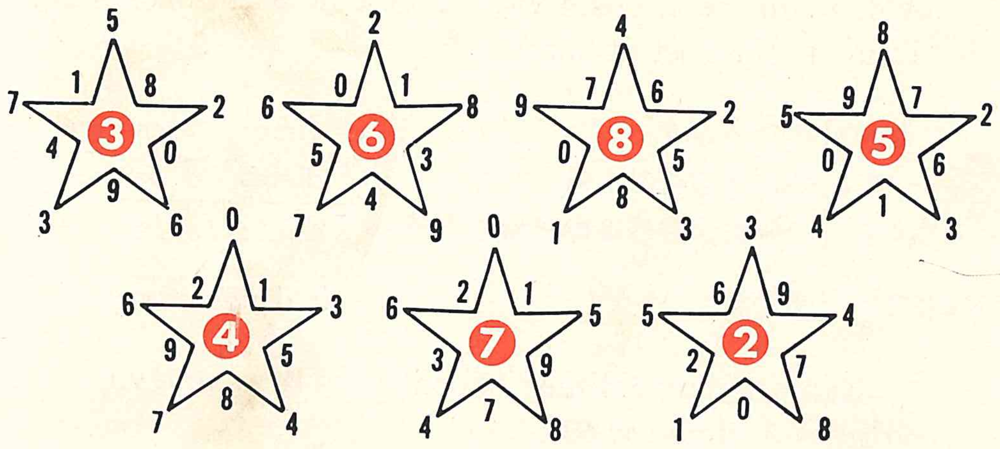
4.	5	8	9	28	19	34	47	23
	8	8	5	37	28	39	27	49
	+9	+6	+8	+19	+29	+18	+19	+18

5. Playing bean bag is fun! Each player gets three throws. Find the scores for these children.

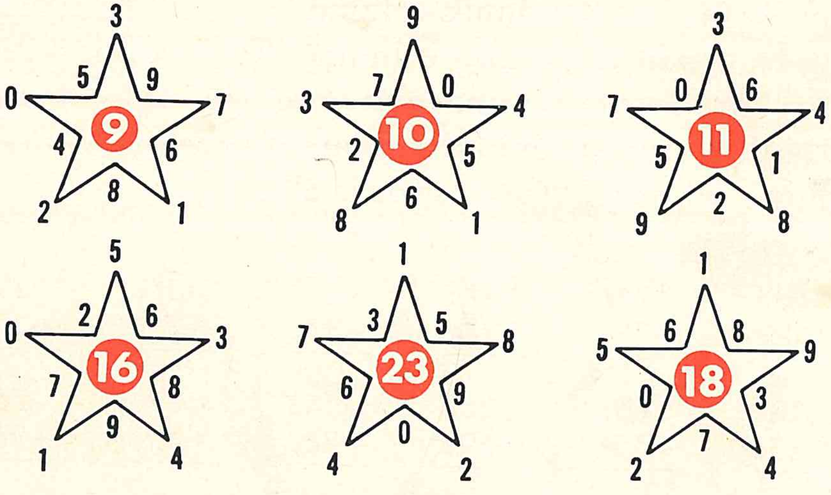
Joan	Jack	Mary	Ann	Harry
7	9	7	5	6
8	3	4	9	7
+2	+6	+6	+5	+5



Can You Make These Your Lucky Stars?

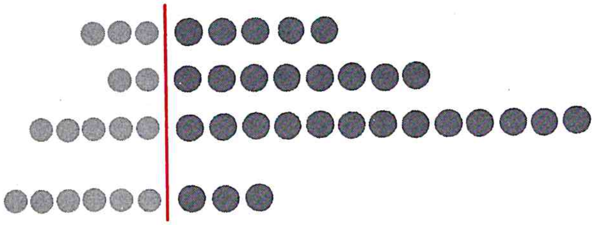


Working together may be easier if these stars are drawn on the blackboard. Number them exactly as they are in the book. The game is to add each number outside a star, in turn, to the number inside the star. Saying all these sums correctly will help you with your adding later on. These will be your lucky stars.



Adding Cents and Dimes

1. A drawing book costs 35¢. A box of paints costs 28¢. What is the cost of both?



= 3 dimes 5 cents = 35¢
= 2 dimes 8 cents = 28¢

= 5 dimes 13 cents = 63¢

or 6 dimes 3 cents

Explain why 5 dimes 13 cents has the same value as 6 dimes 3 cents, or 63¢.

Here is a shorter way to add 35¢ and 28¢. Write 28¢ under 35¢. The 5 and 8 are in ones column or cents column. The 3 and 2 are in tens column or dimes column.

Short Way

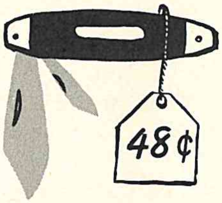
$$\begin{array}{r} 35¢ \\ +28¢ \\ \hline 63¢ \end{array}$$

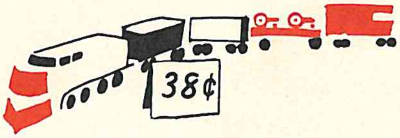
Think, "5 and 8 are 13." This means 3 cents and 1 dime. Write 3 in cents column. Remember the 1 dime until you add the dimes column.

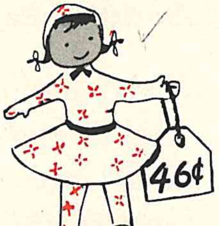
Now add the dimes column. The 1 dime you are carrying in your mind and 3 dimes make 4 dimes. Think, "4 dimes and 2 dimes are 6 dimes." Write 6 in dimes column. The answer is 63¢.

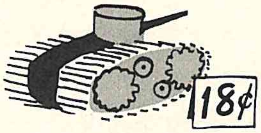
2. Write the sums.

43¢ +29¢	26¢ +15¢	37¢ +44¢	48¢ +37¢	37¢ +26¢	29¢ +15¢
18¢ +25¢	46¢ +15¢	35¢ +59¢	54¢ +28¢	39¢ +49¢	75¢ +28¢

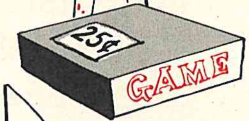




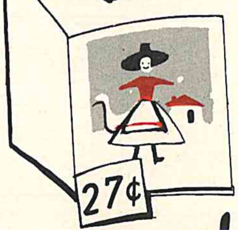


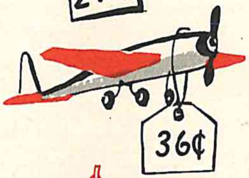


Using Your Addition



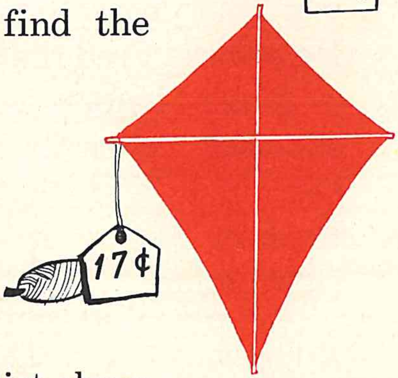
1. Tell how many dimes and how many cents it takes to buy each toy.
2. Explain how 7 dimes 16 cents would buy a knife and a train.
3. Explain how 8 dimes 6 cents would buy a knife and a train.
4. Add the shorter way and find the cost of a knife and a train.

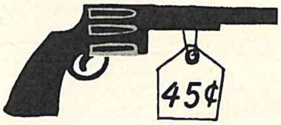




Add the shorter way and find the cost of:

5. A knife and a kite
6. An airplane and a gun
7. A train and a doll
8. A doll and a book
9. A tank and a game
10. A kite and a gun
11. Choose two things from the list above that you would like to have. How much would the two things cost?
12. Copy. Add.





$$\begin{array}{r} 28¢ \\ +33¢ \\ \hline \end{array} \quad \begin{array}{r} 45¢ \\ +19¢ \\ \hline \end{array} \quad \begin{array}{r} 59¢ \\ +15¢ \\ \hline \end{array} \quad \begin{array}{r} 36¢ \\ +45¢ \\ \hline \end{array} \quad \begin{array}{r} 44¢ \\ +28¢ \\ \hline \end{array} \quad \begin{array}{r} 25¢ \\ +39¢ \\ \hline \end{array} \quad \begin{array}{r} 17¢ \\ +34¢ \\ \hline \end{array} \quad \begin{array}{r} 49¢ \\ +38¢ \\ \hline \end{array}$$

Subtracting Cents and Dimes

1. Fred had 8 dimes and 5 pennies. How many cents did he have?
2. Fred gave the storekeeper 3 dimes and 9 cents for some ice cream. How many cents did the ice cream cost?
3. Fred had 85¢ in his pocket. After he spent 39¢ for ice cream, how much money did he have left?

$$\begin{array}{lrlrl} \text{Fred} & 8 & \text{dimes}\ 5\ \text{cents} = & 7 & \text{dimes}\ 15\ \text{cents} \\ & -3 & \text{dimes}\ 9\ \text{cents} = & -3 & \text{dimes}\ \ 9\ \text{cents} \\ \cline{4-5} & & & 4 & \text{dimes}\ \ 6\ \text{cents} = 46¢ \end{array}$$

When Fred found he could not take 9¢ from 5¢, what did he do?

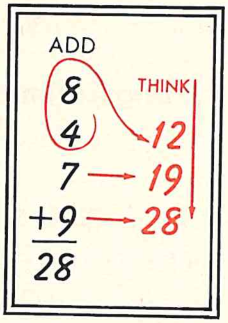
4. Fred's brother said, "If you are going shopping often, you must learn to subtract money in a shorter way." He showed Fred that you must borrow 1 dime from the 8 dimes before you can subtract. Then the 5¢ with the dime will make 15¢. Explain the rest of the subtraction.

This is what happens:	This is what you think:
$\begin{array}{r} \overset{7}{\cancel{8}}\ {}^{1}5¢ \\ -3\ 9¢ \\ \hline \end{array}$	$\begin{array}{r} 7\ 15 \\ -3\ \ 9 \\ \hline 4\ \ 6 \end{array}$ or 46¢

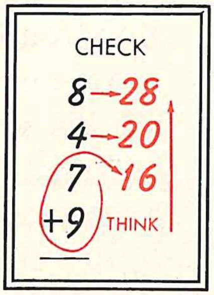
Copy. Find the differences.

5.	53¢	62¢	43¢	35¢	56¢	94¢	52¢	94¢
	−28¢	−35¢	−15¢	−18¢	−39¢	−45¢	−26¢	−59¢
6.	64¢	71¢	86¢	85¢	37¢	40¢	34¢	90¢
	−26¢	−38¢	−18¢	−47¢	−19¢	−22¢	−15¢	−69¢

Adding a Column of Four Numbers



1. Ellen threw four bean bags. To find her score, she added 8, 4, 7, and 9. In adding, Ellen used the additions 8 + 4 = 12, 12 + 7 = 19, 19 + 9 = 28. Tell what additions she used to check.



Copy. Write the sums. Check.

2.

16	14	17	13	12	13	11
+7	+3	+9	+5	+8	+3	+7

3.

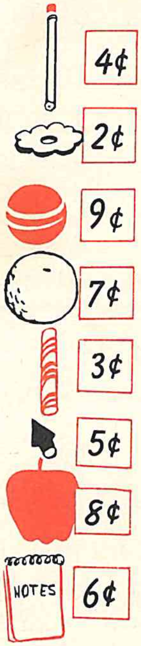
8	6	8	6	5	6	9
8	8	9	7	7	7	2
7	3	9	5	8	3	7
+5	+3	+4	+3	+6	+8	+5

4. Joe went shopping. He bought a cooky, a ball, an apple, and a pencil. How much did he spend?

5. Pam bought a stick of candy, an orange, a ball, and an apple. How much did she spend?

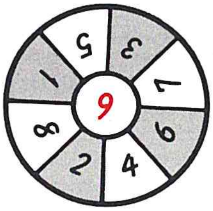
6. Look at the price cards. Tell what each child bought. How much did each spend?

Don	Betty	Alice	Bill	John	Tom	Sue
6¢	8¢	9¢	7¢	3¢	4¢	2¢
9¢	8¢	3¢	6¢	9¢	8¢	9¢
8¢	4¢	7¢	6¢	5¢	2¢	7¢
+5¢	+7¢	+8¢	+6¢	+7¢	+2¢	+5¢



7. Make up problems in which you buy four things shown in the pictures. Find the cost of them.

Using Column Addition



Here is a game that John's class played. The children tore a paper dry-cleaning bag open and laid it flat on the floor. They drew a large circle on the bag. They marked and numbered it as you see here.

At each turn, a player threw four fruit jar rings. To find his score he added the numbers in the spaces where the rings fell. If any ring fell outside the big circle, the player wrote zero for that ring.

Find the scores for these children who played the ring and circle game. Who is the winner in each row?

	Ann	Pat	Mary	Joe	Tom	Dan	Jim	Ted	Sue	Ray
1.	8 4 0 +9	3 7 6 +8	4 8 8 +5	6 4 4 +0	8 9 9 +6	9 7 6 +5	7 8 5 +9	5 0 2 +4	8 6 8 +7	3 4 9 +3
2.	8 4 4 +9	5 6 6 +5	9 7 8 +4	7 9 6 +3	4 5 5 +8	8 7 3 +9	0 2 8 +5	6 7 6 +6	9 5 5 +6	4 9 8 +3
3.	7 5 8 +6	3 0 4 +8	9 6 8 +5	7 4 9 +7	8 8 3 +9	5 2 5 +3	2 9 7 +6	6 6 8 +2	7 5 8 +4	7 4 0 +8

Empty Places in Column Addition

1. Carl bought a kite for 12¢. He bought a ball of string for 5¢. What did he pay for both?

$$\begin{array}{rcc} & \text{tens} & \text{ones} \\ & 1 & 2\text{¢} \\ + & & 5\text{¢} \\ \hline & 1 & 7\text{¢} \end{array}$$

To add, write 5 under the 2 in 12¢. Since 5 is less than 10, there will be no number to write in tens place. Leave an empty space under the 1 in 12¢.

Now add 2 ones and 5 ones. Write 7 in ones place in the sum. Then add the tens. There is only 1 ten. Skip the empty place. Write 1 in tens place in the sum. Put the cents sign after the sum. The answer is 17¢.

2. Sue spent 33¢ for tea, 14¢ for sugar, 2¢ for candy, and 10¢ for cookies. What did she spend?

$$\begin{array}{rcc} & \text{tens} & \text{ones} \\ & 3 & 3\text{¢} \\ & 1 & 4\text{¢} \\ & & 2\text{¢} \\ + & 1 & 0\text{¢} \\ \hline & 5 & 9\text{¢} \end{array}$$

There is an empty place in the tens column. Skip the empty place as you add the tens. Check by adding up.

Copy. Write the answers.

3.
$$\begin{array}{r} 36\text{¢} \\ +3\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 41\text{¢} \\ +7\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 11\text{¢} \\ +5\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 53\text{¢} \\ +6\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 16\text{¢} \\ +2\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 43\text{¢} \\ +4\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 56\text{¢} \\ +3\text{¢} \\ \hline \end{array}$$

4.
$$\begin{array}{r} 21\text{¢} \\ 5\text{¢} \\ 11\text{¢} \\ +31\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 32\text{¢} \\ 10\text{¢} \\ 4\text{¢} \\ +23\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 4\text{¢} \\ 51\text{¢} \\ 2\text{¢} \\ +22\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 16\text{¢} \\ 42\text{¢} \\ 1\text{¢} \\ +30\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 60\text{¢} \\ 5\text{¢} \\ 31\text{¢} \\ +2\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 53\text{¢} \\ 21\text{¢} \\ 11\text{¢} \\ +3\text{¢} \\ \hline \end{array} \quad \begin{array}{r} 45\text{¢} \\ 2\text{¢} \\ 1\text{¢} \\ +40\text{¢} \\ \hline \end{array}$$

Locating Places on a Clock Face

1. Picture A shows a shape that Tom cut out of paper. What is the name of this shape?
2. Tom then looked at the face of a real clock. How many numbers did he see?
3. He saw that each number had a certain place. Where was 12 on the clock face? Where was 6?

Tom thought, "Six is half way around the clock face." He folded his circle in half.

He made a mark where 12 belonged. He made a mark where 6 belonged. Then he wrote 12 and 6 on his circle. See picture B.

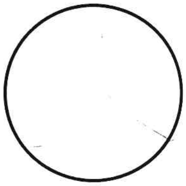
Tom then folded his circle again. Now his circle was folded into four equal parts. Each part was one fourth, or one quarter, of his clock face.

4. Look at picture C. What number did Tom write at a quarter past 12? At a quarter to 12?

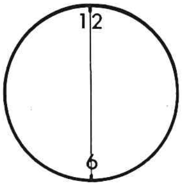
Picture D shows where Tom wrote the other numbers on his clock face. Then he pasted his clock face on a paper plate. He made a long hand and a short hand for his clock.

5. Make a clock face as Tom did.

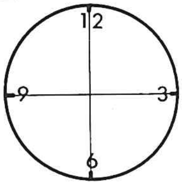
A A CIRCLE



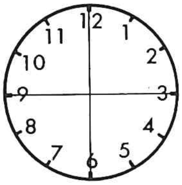
B HALF WAY



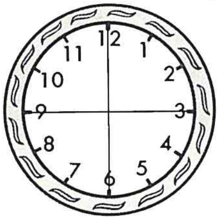
C QUARTERS

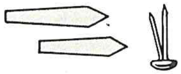


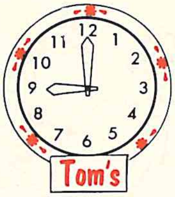
D TWELVE HOURS

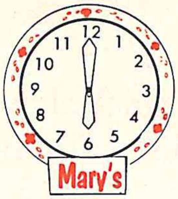


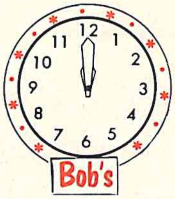
Tom's Clock

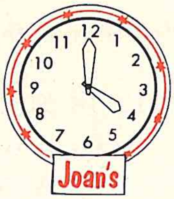












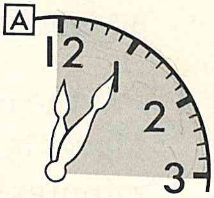
Hours and Minutes

1. Tell what time each child's clock face shows.

Use the clock face you made. Tell what time your clock shows when:

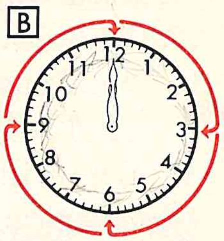
2. The short hand is at 7. The long hand is at 12.
3. The short hand is at 5. The long hand is at 12.
4. The short hand is at 7. The long hand is at 12.
5. Look at picture A. Count the little spaces between 12 and 1. How many spaces are there? Each little space means one minute.

A



6. How many minutes does the long hand take to go from 12 to 1?
7. How many minute spaces are there from 12 to 2? From 12 to 3?
8. Use picture B. Begin at 12. Count the minute spaces around the clock. How many spaces did you count? How many minutes would this be?

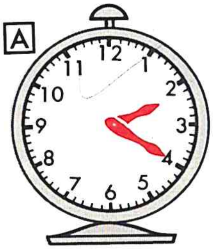
B

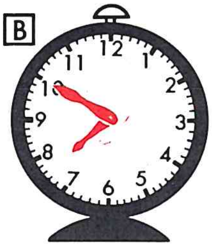


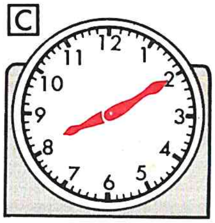
9. Count the minute spaces around the clock by 5's. How many did you count?
10. Mark off the minute spaces on your clock face.

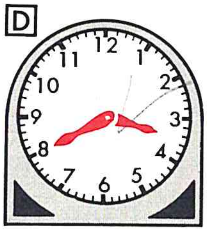
Minutes and Half Hours

1. Look at clocks A, B, C, D. Which shows ten minutes after eight? Ten minutes to eight? Twenty minutes after two? Twenty minutes to four?

A


B


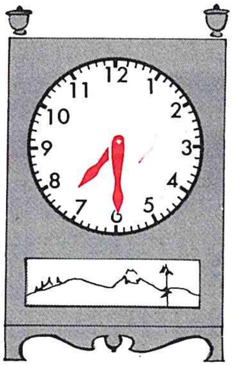
C


D


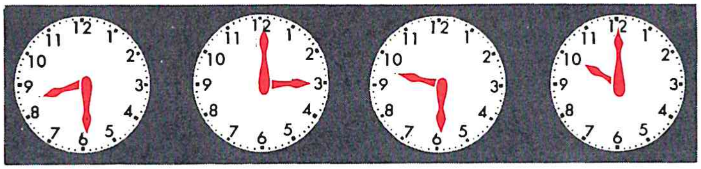
2. On your clock face show: 5 minutes after 9; 15 minutes to 7; 10 minutes to 12; 5 minutes to 4.
3. Move the minute hand around your clock face from 12 to 12. A real clock takes one hour to move the minute hand from 12 to 12. How many minutes is this?

🟥 **60 minutes is the same as 1 hour, or 60 minutes (min.) = 1 hour (hr.).**

4. Put the minute hand of your clock at 12. Move the hand around to 6. How many minutes would this be?
5. When the minute hand is at 6, it is "half way." This is called "half past" the hour. The clock at the right shows "half past seven." Where is the short hand pointing?

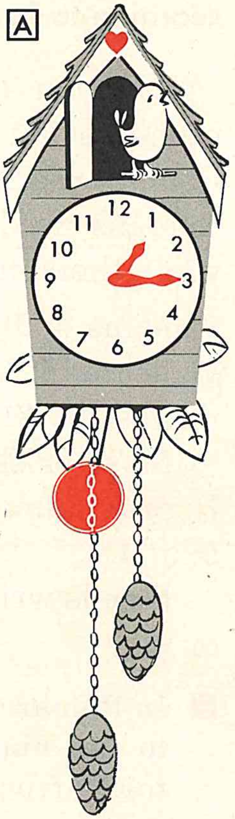


6. What time does each clock below show?



A Quarter Past and a Quarter To

A

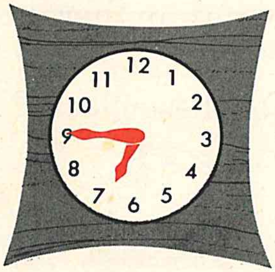


1. Move the minute hand on your clock face from 12 to 3. How many minutes is this?

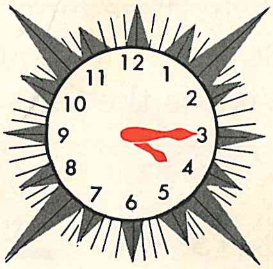
   When the minute hand is at 3, it is a "quarter past" the hour. The clock in picture A shows a quarter past 1 o'clock.
2. Where is the hour hand pointing on the clock in picture A?
3. Use your clock face. Show a quarter past 6; a quarter past 9; a quarter past 4; a quarter past 11; a quarter past 12.
4. Move the minute hand on your clock face from 12 to 9. How many minutes is this?

   When the minute hand is at 9, it is a "quarter to" the hour. The clock in picture B shows a quarter to 7 o'clock.
5. Where is the hour hand pointing on the clock in picture B? In picture C?
6. Use your clock face. Show a quarter to 2; a quarter to 4; a quarter to 10; a quarter to 1; a quarter to 9; a quarter to 6.

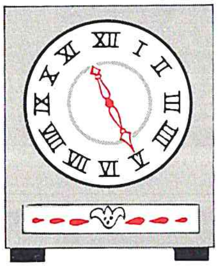
B



C



Learning to Read Roman Numerals



Did you ever see a clock face with numbers like this? These are called Roman numerals. In olden times, the Romans used letters, like I, V, and X, to write their numbers, like this:

I means 1; II means 1 + 1, or 2. What does III mean? V means 5; VI means 5 + 1, or 6. Explain VII; VIII. X means 10; XI means 10 + 1, or 11. Explain XII.

Most clocks show 4 as IIII. A better way to show 4 in Roman numerals is IV. I written before V means 1 from 5, or 4.

Nine is written IX. I written before X means 1 from 10, or 9.

🟥 **In Roman numerals, I written after a number is added to the number. I written before a larger number is taken from the number, as IV and IX.**

Study the two kinds of numbers below.

I = 1 II = 2 III = 3 IV = 4 V = 5 VI = 6

VII = 7 VIII = 8 IX = 9 X = 10 XI = 11 XII = 12

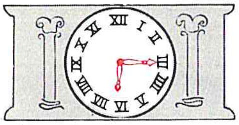
1. Write these Roman numerals in our numbers.

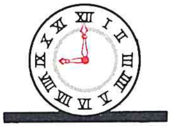
   II V X I VI VIII XI III IV VII IX

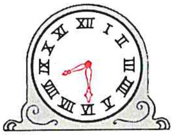
2. Write these numbers as Roman numerals.

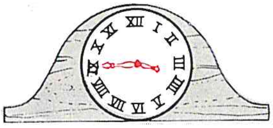
   3 6 8 11 9 5 7 12 4 10

3. What is the time on each of these clocks?





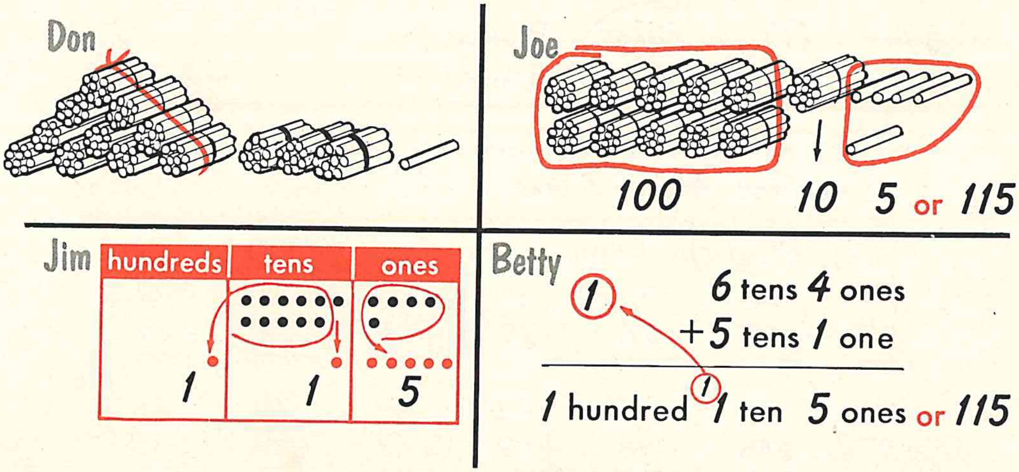




Carrying Tens to Hundreds Place

Don and Bill were counting the logs in Don's log cabin set. Bill was counting the logs one by one. He kept forgetting how many he had counted. Don showed Bill an easy way to count the logs.

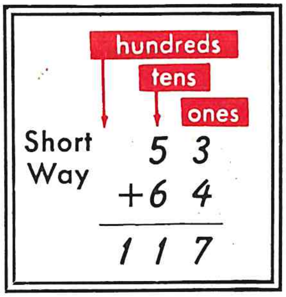
1. Don put the logs in bundles of 10. Then he put 10 of these bundles together in one large bundle. How many logs were there in the large bundle?
2. How many bundles of 10 did Don have left after he made the large bundle? How many logs were there in these bundles?
3. How many single logs did Don have left?
4. How many logs were there in Don's set?
5. Joe has 64 pieces in his log cabin set. Jim has 51 pieces in his set. Together they have how many pieces? Look at the way Joe, Betty, and Jim answered this question. Explain each way.



Remember What You Carry to Another Column

1. Sue has 53 stamps in her stamp book. She has 64 other stamps. How many stamps has she in all?

Think, "3 ones and 4 ones are 7 ones." Write 7 in ones place. Think, "5 tens and 6 tens are 11 tens. 11 is 10 tens and 1 ten more, or 1 hundred and 1 ten." Write 1 in hundreds place and 1 in tens place. The sum is 117.

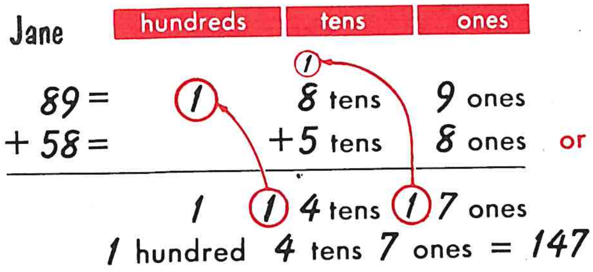


2. Copy. Find the sums.

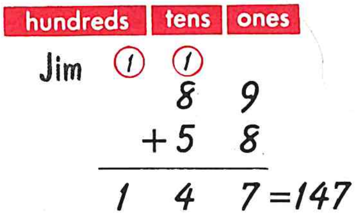
57	35	83	72	81	94	66	46
+82	+93	+75	+81	+96	+72	+93	+91

3. Jane had 89 stamps. Jim had 58 stamps. Together they had how many stamps?

Jane found the answer a long way. Jim used a short way. Explain each way.



or



Copy. Find the sums.

4.	74	46	37	65	75	57	29	73
	+98	+85	+76	+79	+75	+78	+89	+98
5.	96	78	56	82	59	48	39	64
	+97	+48	+98	+69	+67	+89	+86	+79

Copy

Addition and Subtraction Races

Read the directions for the addition races on page 94. Do these races in exactly the same way.

Race 1. Write the sums on folded paper.

1.	36	67	39	54	87	39	58	73
	+21	+43	+15	+33	+57	+22	+43	+50
2.	78	37	71	95	49	28	37	93
	+24	+25	+31	+64	+23	+14	+10	+72
3.	69	86	97	89	92	53	52	96
	+34	+30	+63	+18	+51	+10	+42	+21

Race 2. Write the differences on folded paper.

1.	784	937	459	360	475	975
	−232	−125	−336	−120	−114	−641
2.	941	765	487	398	674	759
	−321	−454	−356	−297	−434	−526

Race 3. Write the sums on folded paper.

1.	6	8	4	9	7	3	5	9
	4	6	7	3	7	9	8	9
	+6	+5	+8	+7	+5	+6	+7	+2
2.	4	7	5	9	6	8	9	7
	9	8	9	7	8	9	6	9
	8	5	7	9	7	6	9	5
	+6	+9	+6	+3	+8	+7	+2	+8
		79						

How Well Have You Learned?

Do your very best. Your right answers will tell you how far you turned the pointer on the dial.

1. On a test Jerry got 19 words right. He missed 6 words. How many words were there in the test? (127, 128)
2. Ann paid 59¢ for a notebook cover. Then she paid 25¢ for paper. How much did she spend in all? (130)
3. Jack had 75¢. He paid 36¢ for colored pencils. How much money did he have left? (132)
4. Sue paid 5¢ for a pencil, 2¢ for an eraser, 12¢ for envelopes, and 10¢ for paper. What did she spend in all? (135)
5. Tom played a guessing game. He got 75 right guesses. Forty-two guesses were wrong. How many guesses did he have in all? (141, 142)
6. Sue had 95¢. She spent 49¢. How many cents did she have then? (132)
7. Ella bought a 20¢ loaf of bread, a 5¢ bunch of carrots, a 23¢ box of cookies, and an 11¢ bar of soap. What did she pay for all of these things? (135)
8. Joe had books numbered with Roman numerals. He got them out of order. Write the numbers in order.
   VII, XI, VI, X, IV, I, XII, VIII, II, IX, III, V (140)

Helping Yourself

Copy in straight columns. Add. Check.

1. 9 + 3 + 7 + 6 = ?   7 + 9 + 7 + 5 = ? (133)
2. 34 + 3 + 21 + 11 = ?   42 + 23 + 3 + 31 = ? (135)
3. Keep 17 in mind. Add it to each number below. Hold your paper under the row. Write the sums. (127)
   5 7 9 4 8 6 1 3 2
4. Keep 35 in mind. Add it to each number below. Hold your paper under the row. Write the sums.
   6 4 8 3 1 5 9 2 7 (127, 128)

Write the answers only. Watch the signs. (130)

5.

26¢	47¢	19¢	45¢	28¢	65¢	39¢	52¢
+48¢	+29¢	+79¢	+27¢	+57¢	+19¢	+48¢	+49¢

(132)

6.

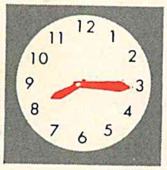
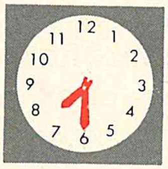
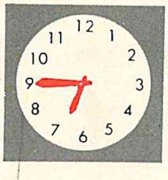
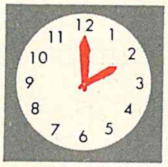
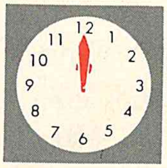
72¢	84¢	45¢	63¢	76¢	98¢	75¢	37¢
−28¢	−55¢	−27¢	−36¢	−59¢	−29¢	−48¢	−19¢

(141, 142)

7.

93	65	42	67	73	94	87	75
+82	+94	+83	+72	+95	+73	+42	+94

8. Write these numbers in Roman numerals. (140)
   11 9 4 2 10 8 12 6 5
9. What time is it by each of these clocks? (136–139)

How Well Are You Doing?

1. Sue's family took a trip. Father drove 95 miles. Then Mother drove 82 miles. How far had they gone?
2. Sue had 75¢. She spent 39¢ for post cards and stamps. How much did she have left?
3. Sue's brother bought a knife for 71¢. Then he paid 5¢ for a post card. What did he spend?
4. Father said it would be one hour until they stopped for lunch. How many minutes would this be?
5. The clock in Father's car showed a quarter after 11. Draw a clock face. Show this time.
6. At lunch Sue ate a sandwich costing 35¢. Then she ate a 20¢ piece of pie. She drank a container of milk costing 14¢. What did her lunch cost?
7. Father ate a 75¢ plate lunch. He drank a 5¢ cup of coffee and ate a piece of cake costing 15¢. What did his lunch cost?
8. Father said he pays 25¢ a gallon for gasoline in the city. On the highway he got it for 19¢ a gallon. How much did he save on a gallon when he bought gasoline on the highway?

Find the sum or difference. Watch the signs.

9.	57	83	46	56	74	95	89	68
	+82	−66	+93	+28	−57	−38	−25	+28

The Ruler

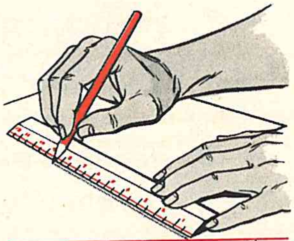
Father is building a playhouse for Ann. Ann and her brother try to help.

Father said, "Ann, please put my tools in the box."

Ann said, "Is the ruler a tool? Shall I put it in the box?"

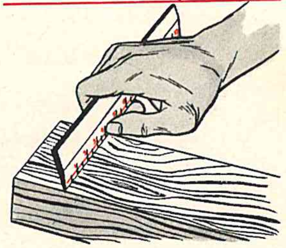
"Yes," said Father. "The ruler is a marking tool. You use it to draw straight lines."

1. Point to the picture which shows the ruler as a marking tool.

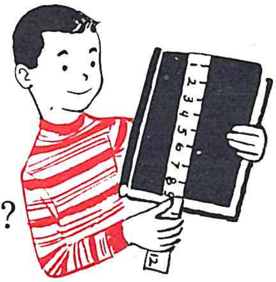


"The ruler is a measuring tool, too," said Father. "It is used to measure how wide, how long, how thick, or how deep."

2. Which picture shows the ruler as a measuring tool? Is it measuring how long, how wide, or how thick?



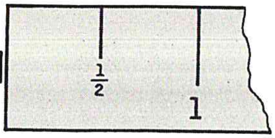
Using a Foot Ruler



1. Tom put his ruler on his book. He wanted to measure the length of the book. How long is it?
2. How many inches long is the whole ruler?

🟥 **12 inches (in.) = 1 foot (ft.)**

3. Look carefully at your own ruler. Are the inches marked off into equal parts? Is an inch on your ruler marked as it is on Tom's ruler?

A


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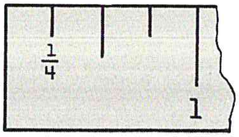

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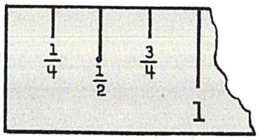
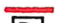


Picture A shows an inch marked off into two equal parts. One part is one half inch ($\frac{1}{2}$ in.).

4. Draw a line 3 in. long. Make the line $\frac{1}{2}$ in. longer.

Picture B shows an inch marked off into four equal parts. One part is one fourth inch ($\frac{1}{4}$ in.).

5. Draw a line 1 in. long. Make the line $\frac{1}{4}$ in. longer.
6. Name some things that are about a foot long.
7. Find some things in your classroom that look about $\frac{1}{2}$ in. thick. Measure them.
8. Tell how long you think each line below is.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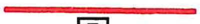
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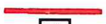
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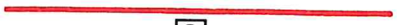
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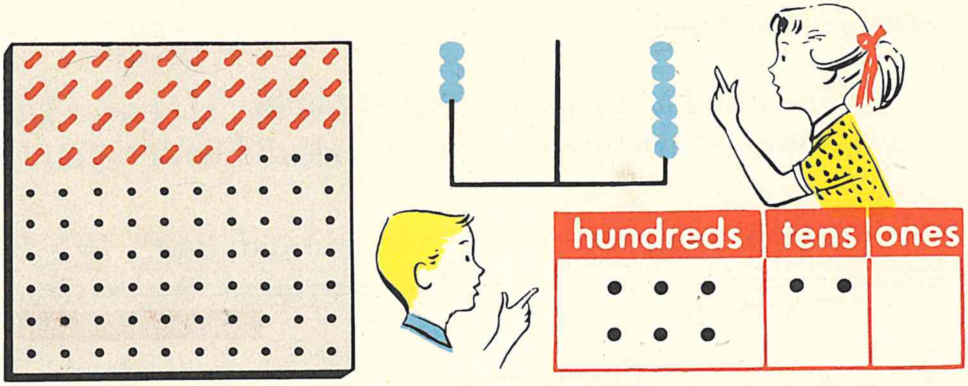
9. Use your ruler. Measure the lines. Were you right?



Reviewing the Meaning of Numbers

1. What number does the peg board show?
2. What number does the abacus show?
3. What number is shown on the place-value frame?
4. Draw an abacus. Have the beads show 95. How many beads are used? If you showed 95 on the peg board, how many pegs would you use?
5. The number 37 is equal to 3 tens and 7 ones. For showing this fact about 37, which is better, the peg board or the place-value frame?
6. The number 37 is also equal to 37 ones. For showing this fact, which is better, the peg board or the abacus?
7. Use figures. Write these numbers: fifty-seven ones; three tens and eight ones; nine hundreds and four ones.
8. Write the figure that is in tens place in each of these numbers:

   64 126 702 13 9 84
9. Make an abacus drawing showing each of these numbers:

   60 136 205 26 450

Adding on the Farm

1. Mr. Mills had a hog that weighed 748 lb. He had a hog weighing 235 lb. How many pounds did both together weigh?

Which addition do you understand best? Why?

Mary

①

7 hundreds and 4 tens and 8 ones
+2 hundreds and 3 tens and 5 ones
9 hundreds and 8 tens and ①3 ones

Jane

hundreds	tens	ones
	①	
7	4	8
+2	3	5
9	8	3

Study Jane's addition. Use her way. Add. Check.

2.	239 +428	547 +126	638 +237	534 +418	476 +316	364 +529	167 +826	238 +539
3.	376 +218	265 +427	173 +618	556 +429	268 +508	209 +707	358 +219	407 +326

4. Mr. Smith had three calves in his truck. One weighed 218 lb. Another weighed 256 lb. The third calf weighed 309 lb. Together what did they weigh?

Explain Jerry and Joe's additions.

Jerry

②

2 hundreds and 1 tens and 8 ones
2 hundreds and 5 tens and 6 ones
+3 hundreds and 0 tens and 9 ones
7 hundreds and 8 tens and ②3 ones = 783 lb.

Joe

hundreds	tens	ones	
	②		
2	1	8	lb.
2	5	6	lb.
+3	0	9	lb.
7	8	3	lb.

5. Mr. Brown had 245 lb. of flour, 112 lb. of corn, and 128 lb. of clover seed in his truck. How many pounds was this?

▶ Use folded paper. Write the sums. Check.

6.							
346	145	263	427	348	315	602	449
109	624	527	320	125	328	219	128
+413	+128	+106	+238	+316	+139	+109	+117

7. Mr. Brown drove 25 miles to the feed store. He then drove 127 miles to the city and 142 miles to get back home. How many miles did he drive in all?

What makes Tom's and Mary's columns look different from the columns Jerry and Joe wrote?

Tom

①
2 tens and 5 ones
1 hundred and 2 tens and 7 ones
+1 hundred and 4 tens and 2 ones
2 hundreds and 9 tens and ①4 ones or 294 miles

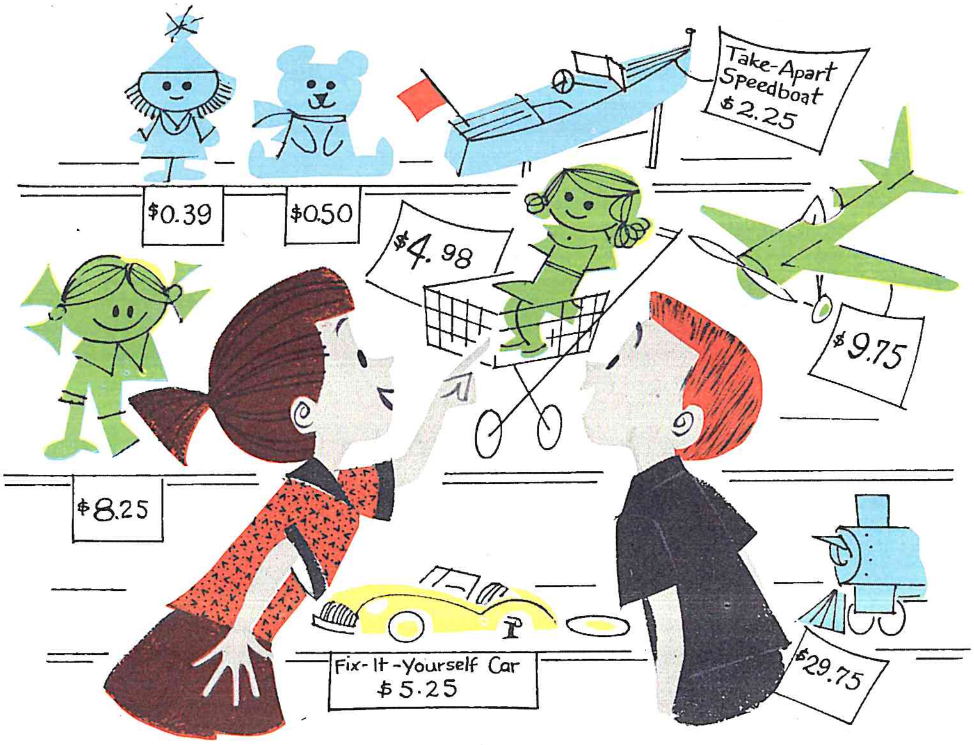
Mary

	hundreds	tens	ones	
		①		
		2	5	miles
	1	2	7	miles
+	1	4	2	miles
	2	9	4	miles

■ **Numbers to be added do not always have the same number of figures. Remember:**

A figure meaning ones goes in ones place.
A figure meaning tens goes in tens place.
A figure meaning hundreds goes in hundreds place.

8. Copy and add. 326, 36, 129 137, 8, 17



Learning More About Dollars and Cents

1. Jim and Sue are wishing they could buy the toys they see in the window. Sue would like to buy the "Dolly-Shopper." How much does it cost?

Sue couldn't read the price. Jim said, "The 4 tells you the number of dollars. The figures at the right of the cents point (.) tell how many cents."

What are the figures at the right of the cents point in $4.98? How do you read $4.98?

2. Read these amounts of money: $4.00; $0.98; $0.90; $0.08; $4.08; $4.90; $8.25; $29.75; $0.39.

3. Jim wished he could buy the "Fix-It-Yourself" car. How much does it cost?

4. Sue said she would rather have the "Take-Apart" speedboat. Does it cost less than the car? How can you tell quickly? What does the speedboat cost?
5. "What a bomber!" said Jim. "It has an engine. It can really fly." What did the bomber cost?
6. What toys cost less than a dollar? Read the price tags on them.
7. Which figure in $0.39 means dimes? Which figure means pennies?
8. How much would it cost to buy a boat and a car?

WRITE		Dollars	Dimes	Cents	
			①		
$2.25	THINK →	$ 2	. 2	5	
+5.25		+ 5	. 2	5	
$7.50 cost		$ 7	. 5	①0	= $7.50 cost

■ **In writing dollars and cents, write the cents points exactly under each other. Write a dollar sign before the first number to be added. Write a dollar sign before the sum.**

9. Look at the additions Albert and George did. Who got the right answer? Who kept the cents points under each other? Who did not write straight columns? Who forgot some cents points?

■ **Cents written with the dollar sign can be written with or without a zero in dollars place, as $0.31, or $.31. Writing 0 in dollars place helps to keep the figures in the right column.**

Albert	George
$5.22	~~$5.22~~
0.31	~~31~~
1.40	~~1.40~~
+0.06	~~+0 6~~
$6.99	~~22.92~~

Playing Store

Alice and some of her friends are playing store. Alice has put prices on the dresses, hats, and shoes she has placed in the room for sale. Before the children could start playing store, they had to learn to read and write money numbers.

Write these in figures:

1. Seven dollars
2. Three dollars and forty cents
3. Nine dollars and six cents
4. Eighty-two cents
5. Two dollars and ten cents

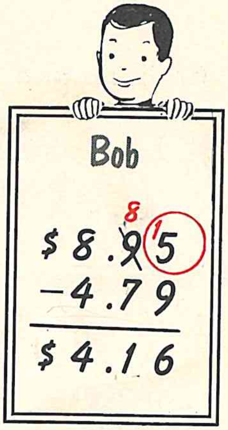
Read these:

6. $7.89
7. $5.06
8. $1.50
9. $0.91
10. $0.05

▶ Here are the addition questions the children had to answer when they played store. Add and check.

11.	$4.67	$1.50	$9.06	$4.67	$5.06	$9.06
	+3.25	+5.06	+1.50	+9.06	+3.25	+5.06
12.	$3.25	$2.27	$6.73	$5.43	$0.47	$0.03
	1.27	3.28	0.15	2.16	1.28	0.40
	+4.02	+1.14	+1.08	+0.05	+0.24	+9.06

Subtracting Dollars and Cents



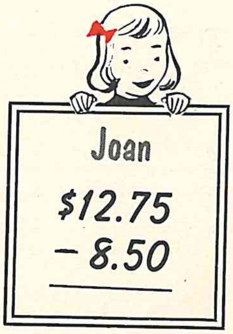
1. Review page 132 carefully.
2. Bob has saved $8.95. What will he have left if he buys a basketball costing $4.79?

   Has Bob figured correctly?

   When he borrowed 1 dime from 9, how many cents did he borrow? How did he show this?

   Did he keep the cents points exactly under each other?
3. Joan got $12.75 for her birthday. She paid $8.50 for a dancing doll. How much money did she have left?

   Finish Joan's subtraction.



▶ Copy. Write the answers.

4.	$3.27	$6.51	$5.43	$13.65	$14.95	$7.57
	−1.05	−0.08	−3.17	−2.43	−7.58	−0.09
5.	$4.45	$0.98	$0.75	$25.59	$21.76	$9.89
	−2.25	−0.57	−0.59	−14.39	−11.38	−5.89

6. Subtract $1.29 from $5.55.
7. Take $0.85 from $16.98.
8. Take $0.45 from $0.75.
9. $18.75 − $0.25 = ?
10. $52.65 − $21.39 = ?
11. $5.00 − $4.00 = ?
12. $0.89 − $0.08 = ?
13. $12.98 − $0.78 = ?
14. $1.76 − $0.69 = ?
15. $10.50 − $5.50 = ?

Addition and Subtraction Practice

COPY

▶ ~~Use folded~~ paper. Write the sums. Check.

1.	$3.15	$6.23	$2.53	$3.50	$6.31	$9.27
	+6.74	+2.58	+7.29	+2.38	+8.49	+4.19
2.	$1.23	$4.35	$6.16	$5.24	$7.39	$4.45
	4.16	3.28	1.07	2.18	0.25	1.03
	+2.59	+1.24	+1.55	+2.36	+0.28	+2.10

3.	326	637	115	543	617	408	454
	+559	+247	+676	+129	+268	+579	+228
4.	226	134	532	415	260	407	200
	135	426	305	267	509	120	259
	+316	+217	+129	+116	+130	+200	+215

5. Review pages 118 and 119.

▶ Use folded paper. Write the answers.

6.	67	53	41	80	75	83	77	95
	−29	−37	−26	−48	−26	−59	−18	−66
7.	76¢	84¢	68¢	52¢	71¢	65¢	37¢	95¢
	−28¢	−39¢	−29¢	−38¢	−24¢	−36¢	−18¢	−67¢

■ **In adding or subtracting money, the cents sign may be used if no amount is one dollar, or more. Use the dollar sign and cents point if any amount in the addition or subtraction is one dollar, or more.**

8. Subtract fifty-nine cents from three dollars and ninety-five cents.

Do You Always Count Your Change?

A wise shopper always counts his change.

1. Mrs. Brown bought a 35¢ cake. She gave the clerk 50¢. The clerk put the 50¢ in his cash drawer. He thought, "35¢ and 5¢ is 40¢." Then he thought, "40¢ and 10¢ is 50¢." He gave Mrs. Brown a nickel and a dime. Use toy money. Show how the clerk made change.

   The clerk made change by adding up to the amount Mrs. Brown gave him.

2. If the cake cost 38¢, what change would the clerk give Mrs. Brown?
3. Tell how the clerk made change from a quarter for each of these sales:

   18¢ 14¢ 9¢ 7¢ 15¢ 16¢ 23¢ 11¢ 21¢

4. How would the clerk make change from a half dollar for each of these sales:

   45¢ 15¢ 11¢ 35¢ 36¢ 27¢ 25¢ 42¢ 20¢

Draw or cut out pictures of pies, cakes, and other bakery goods. Put a price on each thing. Let different children play clerk. Use toy money. Tell the clerk which thing you want to buy. Give him some money. Have him make change. Check to see that he gives you the right change.

Carrying in Longer Column Addition

1. Alice was reading a book. She read 17 pages, 16 pages, 27 pages, and 25 pages. How many pages did she read?
   Explain how each child found the answer.

Alice 17 = 1 ten and 7 ones
16 = 1 ten and 6 ones
27 = 2 tens and 7 ones
+25 = 2 tens and 5 ones

6 tens and 25 ones

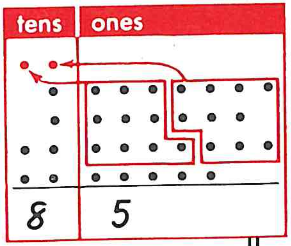
↓

25 ones = 2 tens and 5 ones

$$\begin{array}{rl} & 6 \text{ tens} \\ + & 2 \text{ tens and } 5 \text{ ones} \\ \hline & 8 \text{ tens and } 5 \text{ ones} = 85 \end{array}$$

She read 85 pages.

Sue



Mary

$$\begin{array}{rr} \text{tens} & \text{ones} \\ \textcircled{2} & \\ 1 & 7 \\ 1 & 6 \\ 2 & 7 \\ +2 & 5 \\ \hline 8 & 5 \end{array}$$

Mary added the ones. The sum was 25 ones, or 2 tens and 5 ones. She wrote 5 in ones place. She wrote ② at the top of tens column. She added the tens. ②+ 1 + 1 + 2 + 2 = 8. She wrote 8 in tens place. The sum is 85.

Copy in straight columns. Add. Check by adding up.

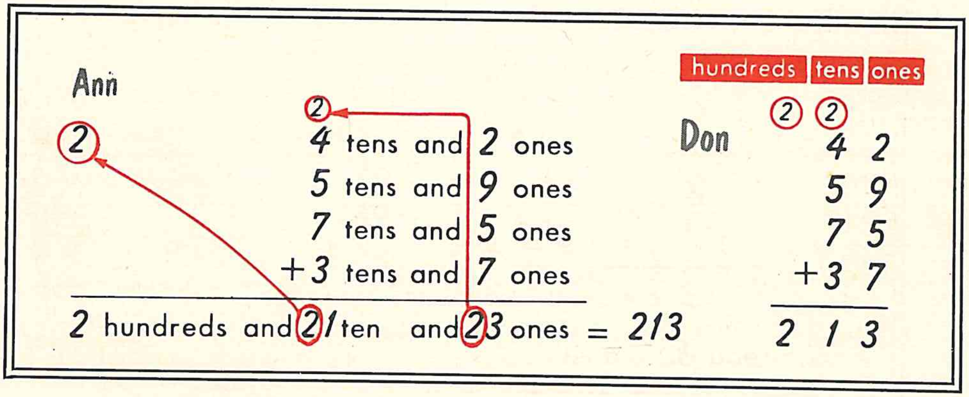
2.
$$\begin{array}{rrrrrrrr} 24 & 36 & 29 & 23 & 17 & 19 & 28 & 35 \\ 15 & 27 & 12 & 37 & 15 & 29 & 19 & 18 \\ 26 & 14 & 15 & 18 & 36 & 18 & 29 & 26 \\ +25 & +22 & +27 & +14 & +31 & +17 & +16 & +14 \\ \hline \end{array}$$

Remember Ten Tens Equal One Hundred

Ann saves trading stamps. Add these amounts for her.

1.
$$\begin{array}{rrrrrrrr} 67 & 48 & 19 & 88 & 57 & 94 & 79 & 87 \\ +94 & +76 & +95 & +19 & +89 & +69 & +58 & +36 \\ \hline \end{array}$$

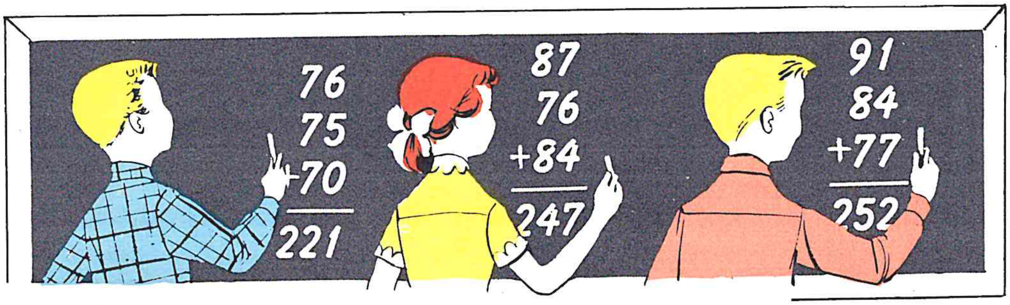
2. At different times Ann got these amounts of stamps: 42 stamps, 59 stamps, 75 stamps, and 37 stamps. How many is this? Explain each child's work.



Don added the ones. The sum was 23 ones, or 2 tens and 3 ones. He wrote 3 in ones place. He wrote ② at the top of tens column. Then he added the tens. ② + 4 + 5 + 7 + 3 = 21 tens, or 2 hundreds and 1 ten. He wrote 1 in tens place and 2 in hundreds place. The sum is 213.

Copy in straight columns. Add. Check by adding up.

3.
$$\begin{array}{rrrrrrrr} 45 & 76 & 59 & 84 & 67 & 38 & 56 & 97 \\ 53 & 65 & 46 & 58 & 16 & 38 & 73 & 39 \\ 64 & 53 & 85 & 76 & 54 & 75 & 68 & 25 \\ +15 & +26 & +53 & +62 & +78 & +87 & +34 & +56 \\ \hline \end{array}$$



Checking Answers

1. The teacher gave each child three numbers to add. Check each answer. Tell whether it is right.

Henry	Floyd	Glen	Oscar	Tommy	Paul
89	74	84	97	76	49
83	77	86	92	75	76
+91	+80	+88	+95	+70	+94
263 ?	231 ?	258 ?	285 ?	221 ?	219 ?

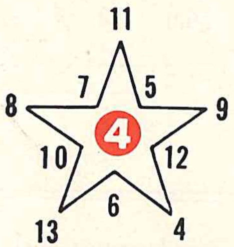
Lucy	Mary	Adele	Cora	Grace	Peggy
78	91	87	75	90	47
70	98	76	81	87	91
+72	+90	+84	+76	+89	+77
220 ?	279 ?	247 ?	232 ?	266 ?	205 ?

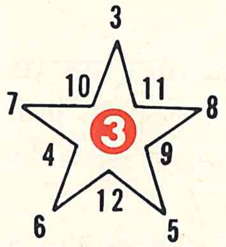
Rose	Sam	Daisy	Harry	Sarah	Lily
97	88	91	84	89	93
78	82	84	93	87	49
+84	+75	+77	+82	+92	+75
259 ?	245 ?	252 ?	277 ?	268 ?	217 ?

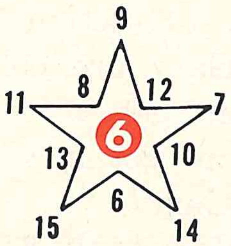
2. Robert added 84, 92, 78, and 97. He said the sum is 351. Is this right?
3. Dick added 87, 76, 73, and 83. What is the correct sum?

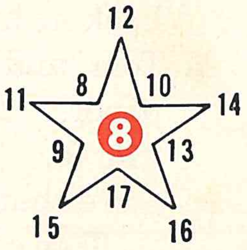
Will These Lucky Stars Shine for You?

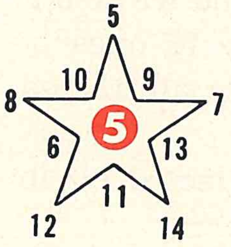
If you play this game often, you will improve your subtraction. To play the game, subtract the number inside a star from each number outside the star. Learn these differences well. Then these lucky stars will shine every time you do subtraction.

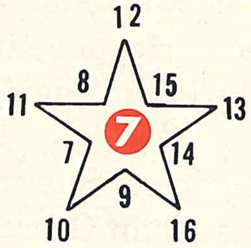


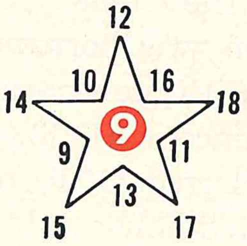


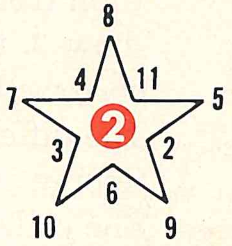












No Pencils, Please!

Keep endings in mind. Say the answers.

1.	12 −5	22 −5	32 −5	15 −6	25 −6	55 −6	18 −9	38 −9	68 −9
2.	11 −2	41 −2	81 −2	14 −7	24 −7	64 −7	16 −8	46 −8	76 −8
3.	13 −8	23 −8	563 −8	12 −6	52 −6	692 −6	17 −9	27 −9	847 −9

Borrowing in Subtraction

1. Review page 155. When Bob could not take 9 from 5 ones, he borrowed 1 dime, or 10 pennies, from dimes column. How did Bob show he had borrowed 1 dime?

$$\begin{array}{lrrr} & \text{hundreds} & \text{tens} & \text{ones} \\ \text{Tom} & 4 & \overset{6}{\cancel{7}} & \overset{1}{6} \\ & -2 & 5 & 8 \\ \hline & 2 & 1 & 8 = \\ & & & 218 \text{ lb.} \end{array}$$

Tom has a problem in which he must borrow to subtract. Read his problem. Look at his subtraction.

2. Tom and Gary are collecting waste paper. Tom got 476 lb. Gary got 258 lb. Tom got how many pounds more than Gary?

Tom could not take 8 ones from 6 ones. He borrowed 1 ten from the 7 tens. He crossed out 7 and wrote 6 to show 1 ten was borrowed. He put the 10 ones he borrowed with the 6 ones he had. Then he subtracted. The difference is 218 lb.

3. George collected 351 lb. of paper. Sue collected 127 lb. She collected how much less than George?

▶ Use folded paper. Find the differences.

4.	651 −212	762 −329	473 −158	865 −437	796 −369	684 −416	758 −219	947 −528
5.	973 −534	651 −325	746 −128	892 −753	795 −477	463 −126	741 −227	632 −315
6.	947 −818	693 −275	751 −128	695 −366	837 −219	592 −327	476 −247	365 −136

Checking Your Subtraction

1. The school lunchroom bought 986 bottles of milk. Of these, 359 bottles were chocolate milk. How many bottles were not chocolate milk?

Is your answer right? How can you be sure that you subtracted correctly? Ann said you check by adding. She added the difference to the number taken away. She said, "If the sum is the same as the first number in your subtraction, your subtraction is correct." Does her subtraction check?

SUBTRACTION		CHECK	
Number had at first	986	359	Number taken away
Number taken away	−359	+627	Difference
Difference	627	986	Sum, or number had at first

Copy. Find answers. Check by adding the difference to the number taken away in your subtraction.

2.	754 −226	671 −329	686 −167	963 −746	495 −276	537 −118	640 −526	534 −215
3.	54¢ −26¢	61¢ −38¢	45¢ −19¢	82¢ −25¢	53¢ −25¢	92¢ −34¢	51¢ −13¢	94¢ −56¢
4.	72 −44	91 −38	63 −25	55 −18	46 −27	53 −36	97 −48	57 −29

5. Do rows 1–3, page 161, again. Check your work.

Carrying from Tens Column to Hundreds Column

1. Mr. Weaver had 261 sheep in one pasture. He had 374 sheep in another. How many sheep was this?

Bill

$$\begin{array}{l|l} \textcircled{1} \longleftarrow & \\ 2 \text{ hundreds} & 6 \text{ tens } 1 \text{ ones} \\ +\,3 \text{ hundreds} & 7 \text{ tens } 4 \text{ ones} \\ \hline 6 \text{ hundreds} & \textcircled{1}3 \text{ tens } 5 \text{ ones} = 635 \end{array}$$

Joan

$$\begin{array}{rrr} \text{hundreds} & \text{tens} & \text{ones} \\ \textcircled{1} & & \\ 2 & 6 & 1 \\ +3 & 7 & 4 \\ \hline 6 & 3 & 5 \end{array}$$

When Bill added tens, he got 13 tens. What did he do then? When Joan added tens, what number did she write in her sum? What number did she carry? How did she show this?

▶ Copy. Add. To check, add in the opposite direction.

2.	387	296	192	739	547	636	482
	+442	+571	+276	+180	+382	+173	+456

3.	463	584	271	565	376	297	692
	+72	+95	+62	+83	+51	+90	+37

4. Mr. West had three herds of sheep. He had 253 sheep in the first herd. He had 182 sheep in the second herd, and 490 in the other. How many sheep had he?

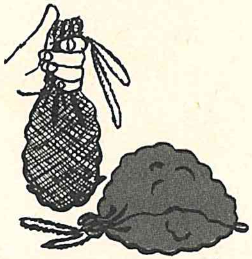
$$\begin{array}{rrr} \text{hundreds} & \text{tens} & \text{ones} \\ \textcircled{?} & & \\ 2 & 5 & 3 \\ 1 & 8 & 2 \\ +4 & 9 & 0 \\ \hline 9 & 2 & 5 \end{array}$$

What figure belongs in the circle at the top of hundreds column? How do you know?

Copy. Add. To check, add in opposite direction.

5.	483	351	532	635	514	192	42
	291	118	185	171	92	184	476
	+102	+490	+261	+152	+282	+72	+81

Sometimes We Carry Twice in Adding



1. Bob had 487 marbles. Frank had 265 marbles. If they put them all together, how many will there be?

Bob

	①	①	
4 hundreds	8 tens	7 ones	
+ 2 hundreds	6 tens	5 ones	
7 hundreds	①5 tens	①2 ones	= 752

Frank

hundreds	tens	ones
①	①	
4	8	7
+2	6	5
7	5	2

When Frank added 7 ones and 5 ones, how many ones did he get? What figure did he write in ones place? How many tens did he carry to tens place? When he added 1 ten and 8 tens and 6 tens, what figure did he write in tens place? What did he do with the rest of the tens? If you do not know, Bob's work will help you.

Copy. Add. Check your addition.

2.	367 +258	289 +579	476 +388	179 +678	348 +175	296 +365	453 +278
3.	476 +84	385 +79	547 +85	178 +98	559 +87	637 +94	576 +47
4.	489 176 +284	507 295 +179	448 171 +338	179 68 +499	98 396 +88	76 417 +327	643 89 +24

Problems About a Trip

1. The Browns went on a trip. They drove 328 miles the first day, 314 miles the next day, and 247 miles the third day. How many miles was this?
2. It took the Browns four days to drive home by a different way. They drove 216 miles the first day, 209 miles the second day, 267 miles the third day, and 213 miles the fourth day. How many miles was this?
3. One day Mr. Brown spent \$3.18 for gasoline and oil, \$4.25 for food, and \$1.30 to have a tire fixed. How much did he spend in all?
4. Another day Mr. Brown spent \$2.25 for gasoline and oil, \$5.10 for food, and \$0.75 for rent of a place to camp. How much did he spend in all?
5. One summer the Browns had their vacation in the north woods. To get there, they drove 322 miles one day, 234 miles the next day, 308 miles the third day, and 68 miles the fourth day. How many miles was this?

The Reds and the Blues Race Again

Race exactly as you did on page 94.

Race 1. Write the differences.

1.	37	73	32	84	30	95
	−18	−38	−16	−57	−14	−49

2.	467	654	793	867	983
	−139	−236	−457	−328	−645

3.	589	796	294	893	785
	−57	−5	−52	−861	−783

Race 2. Write the sums quickly.

1.	37	83	32	84	30	57
	65	43	36	25	44	26
	+71	+24	+97	+81	+59	+65

2.	452	338	610	523	164
	224	126	178	243	233
	+165	+245	+123	+167	+439

3.	463	52	678	393	5
	27	8	45	7	65
	+321	+473	+6	+5	+374

Race 3. Write the answers.

1.	$25.45	$58.62	$0.98	$5.36
	−4.09	−3.26	−0.39	−2.18

2.	$.67	$.98	$.85	73¢	56¢
	−.48	−.59	−.26	−25¢	−38¢

Borrowing from Hundreds Place

1. Jim read 145 pages of a book. There are 328 pages in the book. How many pages are left to read?

$$\begin{array}{lrlrlrl} \text{Jim} & \overset{2}{\cancel{3}} & \text{hundreds} & \overset{10}{2} & \text{tens} & 8 & \text{ones} \\ & -1 & \text{hundreds} & 4 & \text{tens} & 5 & \text{ones} \\ \hline & 1 & \text{hundreds} & 8 & \text{tens} & 3 & \text{ones} = 183 \end{array}$$

$$\begin{array}{lccc} & \text{hundreds} & \text{tens} & \text{ones} \\ \text{Mary} & \overset{2}{\cancel{3}} & {}^{1}2 & 8 \\ & -1 & 4 & 5 \\ \hline & 1 & 8 & 3 \end{array}$$

Why did Jim have to borrow 1 from hundreds column? One hundred is how many tens? How did Jim show this?

How did Mary show the 1 hundred she borrowed? Explain all of Mary's subtraction.

Copy. Find answers. Check. Page 163 will help you.

2. $\begin{array}{r} 417 \\ -145 \\ \hline \end{array} \quad \begin{array}{r} 749 \\ -481 \\ \hline \end{array} \quad \begin{array}{r} 545 \\ -163 \\ \hline \end{array} \quad \begin{array}{r} 628 \\ -374 \\ \hline \end{array} \quad \begin{array}{r} 359 \\ -192 \\ \hline \end{array} \quad \begin{array}{r} 728 \\ -243 \\ \hline \end{array}$

3. $\begin{array}{r} 459 \\ -283 \\ \hline \end{array} \quad \begin{array}{r} 735 \\ -572 \\ \hline \end{array} \quad \begin{array}{r} 916 \\ -664 \\ \hline \end{array} \quad \begin{array}{r} 617 \\ -295 \\ \hline \end{array} \quad \begin{array}{r} 940 \\ -580 \\ \hline \end{array} \quad \begin{array}{r} 765 \\ -380 \\ \hline \end{array}$

4. $\begin{array}{r} 639 \\ -346 \\ \hline \end{array} \quad \begin{array}{r} 647 \\ -275 \\ \hline \end{array} \quad \begin{array}{r} 938 \\ -582 \\ \hline \end{array} \quad \begin{array}{r} 507 \\ -395 \\ \hline \end{array} \quad \begin{array}{r} 846 \\ -350 \\ \hline \end{array} \quad \begin{array}{r} 976 \\ -581 \\ \hline \end{array}$

5. $\begin{array}{r} 429 \\ -57 \\ \hline \end{array} \quad \begin{array}{r} 738 \\ -45 \\ \hline \end{array} \quad \begin{array}{r} 658 \\ -73 \\ \hline \end{array} \quad \begin{array}{r} 964 \\ -81 \\ \hline \end{array} \quad \begin{array}{r} 905 \\ -32 \\ \hline \end{array} \quad \begin{array}{r} 684 \\ -90 \\ \hline \end{array}$

6. $\begin{array}{r} 519 \\ -264 \\ \hline \end{array} \quad \begin{array}{r} 472 \\ -180 \\ \hline \end{array} \quad \begin{array}{r} 589 \\ -393 \\ \hline \end{array} \quad \begin{array}{r} 624 \\ -72 \\ \hline \end{array} \quad \begin{array}{r} 748 \\ -94 \\ \hline \end{array} \quad \begin{array}{r} 937 \\ -55 \\ \hline \end{array}$

7. 637 − 263 = ☐ 847 − 95 = ☐ 607 − 53 = ☐

17

5

The Children Make a Pioneer Village

The children were reading about pioneers and Indians. They made a play pioneer village.

1. The children used twigs to make cabins. Harry brought 125 little straight twigs, and Joe brought 83 twigs. How many more twigs did Harry bring than Joe did?
2. They used 194 twigs to make a small cabin. They used 376 twigs for a big cabin. How many more twigs did it take for the big cabin?
3. The children cut out 88 trees. They used 26 for the village. How many trees were left?
4. One class made 29 paper Indians and the other class made 25 paper Indians. How many more did the first class make?
5. The children used 35 paper pioneers in their village. Of these, 27 were men. How many were women?
6. The pioneers had 65 guns in their homes and 127 guns in their blockhouse. How many more guns did they have in the blockhouse than in their homes?

Borrowing Twice in Subtraction

1. There are 752 children in Ann's school. Of these, 385 are girls. How many boys are there?

Ann showed two steps in the subtraction.

FIRST STEP
Subtract the ones.

hundreds	tens	ones

$$\begin{array}{rrr} & 4 & \\ 7 & \cancel{5} & \enclose{circle}{{}^{1}2} \\ -3 & 8 & 5 \\ \hline & & 7 \end{array}$$

SECOND STEP
Subtract the tens.

hundreds	tens	ones

$$\begin{array}{rrr} 6 & \enclose{circle}{14} & \\ \cancel{7} & \cancel{5} & \enclose{circle}{{}^{1}2} \\ -3 & 8 & 5 \\ \hline & 6 & 7 \end{array}$$

How many ones did Ann have after she borrowed 1 ten? How did she show the borrowed ten?

In the second step, how many tens did Ann have after she borrowed 1 hundred? Why did she put the borrowed tens with 4 rather than with the 5 in tens column?

What did Ann do to the 7 in hundreds place after she borrowed 1 hundred?

Copy. Find answers. Check.

2. $$\begin{array}{rrrrrr} 823 & 647 & 392 & 465 & 736 & 954 \\ -378 & -258 & -195 & -269 & -548 & -775 \\ \hline \end{array}$$

3. $$\begin{array}{rrrrrr} 731 & 624 & 446 & 753 & 812 & 965 \\ -359 & -267 & -179 & -555 & -376 & -488 \\ \hline \end{array}$$

4. $$\begin{array}{rrrrrr} 564 & 843 & 636 & 574 & 942 & 743 \\ -78 & -59 & -48 & -96 & -85 & -56 \\ \hline \end{array}$$

At the Library

1. Lois read four books last month. The books had 242 pages, 291 pages, 135 pages, and 152 pages. How many pages did she read?
2. One day 516 children came to the library. Of these, 348 were boys. How many were girls?
3. Lois helps at the library. She had 436 cards to stamp. After she stamped 159 cards, how many were left to stamp?
4. She saw a set of 12 books. They were numbered from 1 through 12 with Roman numerals. Write these Roman numerals.
5. Lois left the library at a quarter past four. Draw a clock face. Show this time.

Copy. Find answers. Check.

6.	642 −267	763 −485	524 −137	741 −552	835 −148	462 −285	952 −674
7.	848 −369	574 −285	761 −172	486 −298	927 −528	653 −276	724 −389

How Well Have You Learned?

Write the sums. Use folded paper.

1.	13 +4	16 +3	35 +44	47 +52	573 +225	436 +312	627 +241	(90, 92, 126)
2.	29 +8	38 +5	56 +25	69 +24	374 +217	538 +126	249 +428	(117, 127, 150)
3.	4 3 +2	3 2 +2	1 5 +3	24 32 +13	31 22 +35	42 3 +52	352 213 +421	(99, 101, 125, 135)
4.	5 6 +2	7 8 +9	6 7 +9	27 15 +39	36 27 +28	6 98 +6	528 136 +219	(103, 128, 135, 151)
5.	387 +256	594 +138	397 +438	153 412 +264	446 362 +175	45 125 +398		(164, 165)

Find the differences. Use folded paper.

6.	76 −53	98 −25	79 −67	685 −452	738 −517	697 −282	(91, 93, 162)
7.	95 −39	67 −28	84 −46	473 −214	582 −327	364 −136	(118, 168)
8.	748 −264	816 −362	745 −481	462 −269	578 −189	953 −575	(168, 170)

Helping Yourself

1. Write these numbers in figures:

three hundred four　six hundred seventy (27, 149)
two hundred eighty-five　nine hundred sixty-three

five dollars and forty cents　six cents (111, 152, 153)
nine dollars and seventeen cents　ninety cents

Add. (102, 112, 135, 153, 156)

2. $4.78, $1.10, $2.50
3. $3.17, $0.60, $2.16
4. $0.48, $4.50, $0.07
5. 25¢, 4¢, 18¢
6. 5¢, 39¢
7. 9¢, 7¢, 68¢, 15¢

Subtract. (113, 132, 155, 156)

8. $2.15 from $6.75
9. $.33 from $5.64
10. $0.21 from $.98
11. 85¢ − 37¢
12. 56¢ − 9¢
13. $4.58 − $0.04

14. If you gave the storekeeper 50¢, what coins could he give you in change if you spent: (157)

41¢　25¢　15¢　31¢　36¢　10¢　18¢　48¢

15. Write in figures: one half; one fourth; three fourths. (104, 105)

Subtract. Check. (161, 162, 168, 170)

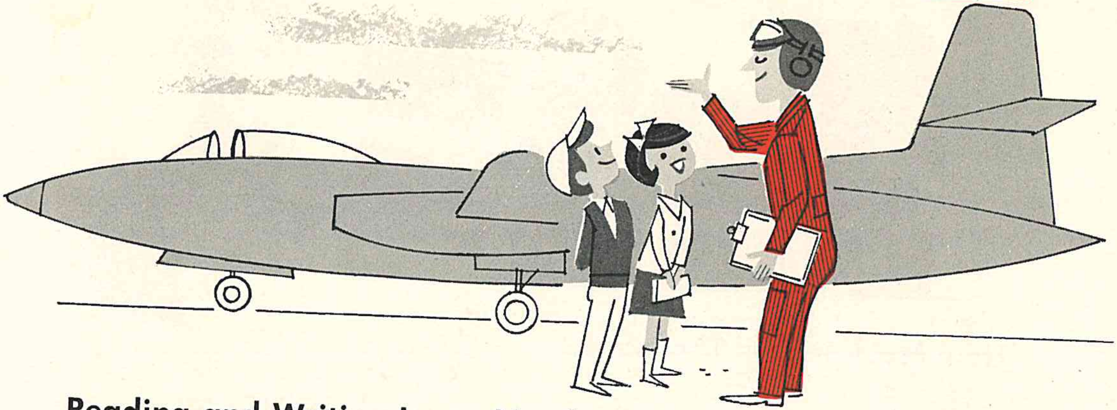
16. 9 from 17
17. 25 from 48
18. 8 from 45
19. 45 from 86
20. 382 from 681
21. 534 from 927
22. 156 from 439
23. 38 from 626

How Well Are You Doing?

1. Bill can sell 156 boxes of berries. He has picked 59 boxes. How many more must he pick?
2. Last year Bill raised 82 watermelons. He sold 63 of them. How many did he not sell?
3. Bill has a roadside counter. He put 18 bunches of radishes, 8 bunches of new onions, 16 bunches of carrots on his counter. How many bunches was this?
4. He sold 19 lb. of green beans. He then had 8 lb. left. How many pounds did he have at first?
5. Mrs. Baker bought vegetables costing 68 cents. She gave Bill $1.00. How much money should she get back? Tell how you would count the change.
6. Bill sold $98.75 worth of vegetables this year. He spent $2.62 for seeds to raise the vegetables. How much did he make for the work he did?
7. He worked 23 hours in April, 64 hours in May, 262 hours in June, and 235 hours in July. How many hours did he work in these four months?
8. Bill made $51.04 selling berries. He made $98.75 selling vegetables. How much more did he make selling vegetables than he did selling berries?

6

UNIT SEVEN



Reading and Writing Large Numbers

1. An airplane pilot flew his plane 765 miles an hour. Is this more than 500 miles an hour? How can you tell without subtracting?

765 means
700 → 7 hundreds
60 → 6 tens
5 → 5 ones

or

hundreds	tens	ones
7	6	5

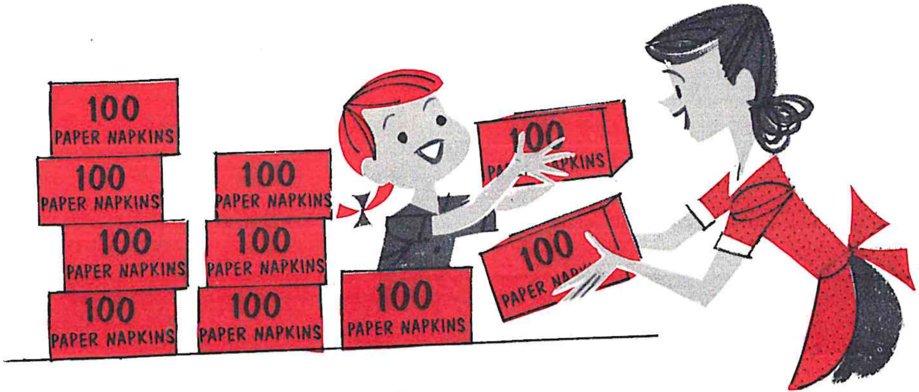
2. Read these numbers. Tell how many hundreds there are in each number. After the hundreds are removed from each number, how many tens remain?

724	542	896	752	175	437	841
207	104	702	320	470	560	900

3. Write these numbers in figures: three hundred seventeen; two hundred forty-nine; eight hundred four; six hundred ten; nine hundred ninety-nine.

4. Write these numbers in words. For the first number write nine hundred seventy-nine.

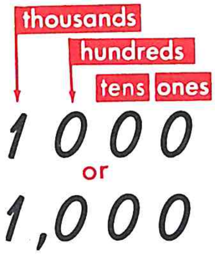
979	635	322	484	803	730	900



How Much Is One Thousand?

1. Joan's mother was helping get ready for a church supper. She bought the paper napkins shown above. How many packages did she buy?
2. How many paper napkins were there in a package?
3. Count the napkins by hundreds. Begin, "1 hundred, 2 hundred," and go on.

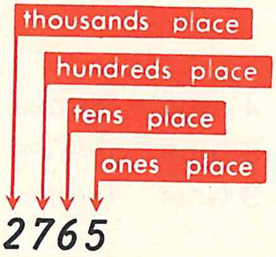
■ **You can say "10 hundreds," but ten hundred is usually read, "1 thousand." One thousand is a four-place number. It is written 1000 when you use only figures.**



4. Use figures only. Write: two thousand; five thousand; nine thousand two hundred; four thousand forty; eight thousand nine hundred fifty-six.
5. Count from 991 to 1010. Write the numbers in figures.
6. Find page 1000 in a large dictionary. Notice what a large number of pages makes 1000 pages.
7. How many children go to your school? Are there nearly 1000? How can you tell?

Reading Four-Place Numbers

1. Jim read that 2765 Cub Scouts marched in a big parade. He read 2765 as two thousand seven hundred sixty-five. Was he right?



THINK	READ
2 means 2 thousands, or	2000
7 means 7 hundreds, or	700
6 means 6 tens, or	60
5 means 5 ones, or	5
	2765

Read 2000, 700, 60, and 5 together. Say, "2 thousand 7 hundred 65," or "Two thousand seven hundred sixty-five."

2. Look at each of these numbers. How many thousands are there in the number? How many hundreds are there in hundreds place? How many tens are there in tens place? Read the whole number.

3765 9341 1019 4294 7082 9320 6808

- **Zero in ones place means there are no ones in ones place.**

- **Zero in tens place means there are no tens in tens place.**

- **Zero can be a place holder. Zero holds ones place when there are no ones in ones place. Zero holds tens place when there are no tens in tens place. Zero holds hundreds place when there are no hundreds in hundreds place.**

Writing Large Numbers

1. Write the number that means:

4 thousands	7 hundreds	4 tens	9 ones
7 thousands	5 hundreds	8 tens	0 ones
6 thousands	0 hundreds	3 tens	0 ones

2. Write these numbers in figures:

   two hundred eighty-four
   five hundred seventy
   one hundred ninety-one
   one hundred sixty-one
   six hundred three
   four hundred thirty-two

3. Write the numbers from 1500 to 1525. Use figures.

4. Write the numbers from 3250 to 3269. Use words, as, three thousand two hundred fifty; three thousand two hundred fifty-one.

■ **You must always put a little line (-), or hyphen, between any words that mean tens and ones. That is, forty-one, twenty-five, sixty-two, and other numbers like these are joined by a hyphen.**

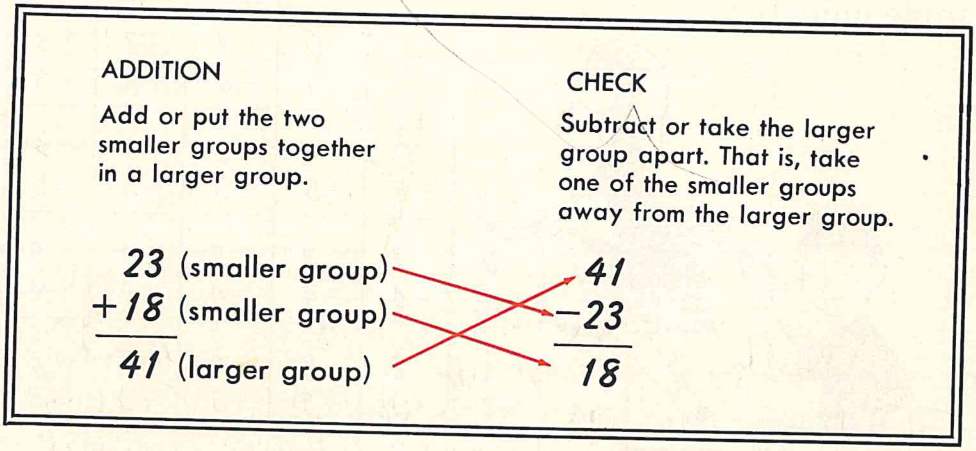
5. Be sure you can read these numbers correctly. Then have someone read the numbers to you. Can you write them correctly?

5569	9302	1610	3370	2691	5020	9006
3201	4866	2135	9304	7005	3715	4068

A New Way to Check Addition

1. Jack said that 23 sandwiches and 18 sandwiches equal 41 sandwiches. Sue asked him if he could prove that his sum was right.

Jack said, "Yes. I can prove or check my sum by subtracting." Here is what he meant.


ADDITION

Add or put the two smaller groups together in a larger group.

CHECK

Subtract or take the larger group apart. That is, take one of the smaller groups away from the larger group.

2. The girls roasted 26 wieners. The boys roasted 17. How many did they roast in all? Check your addition the way Jack did.

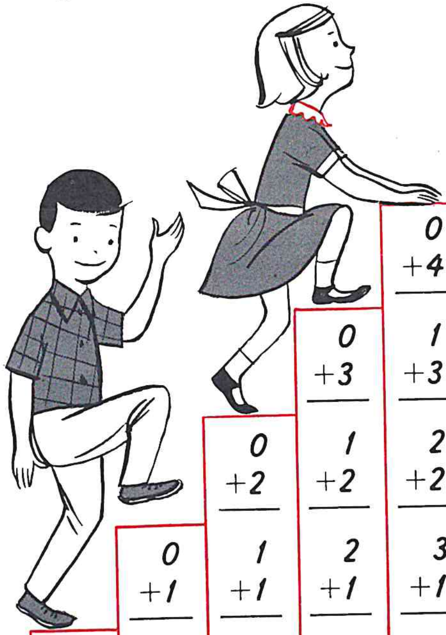
3. The girls toasted 18 rolls. The boys toasted 25. How many did they toast in all? Check your addition the way Jack did.

Add. Use subtraction to check.

4.	24 +32	46 +21	35 +14	43 +25	112 +352	253 +426	526 +342
5.	56 +35	28 +43	39 +36	62 +59	184 +237	460 +357	392 +126

Number Riddles

You may read the easy addition facts from this table. All the facts in a column have the same sum. The sum is written in a circle at the bottom of the column. Say all the facts in this table quickly.



									0 +9
								0 +8	1 +8
							0 +7	1 +7	2 +7
						0 +6	1 +6	2 +6	3 +6
					0 +5	1 +5	2 +5	3 +5	4 +5
				0 +4	1 +4	2 +4	3 +4	4 +4	5 +4
			0 +3	1 +3	2 +3	3 +3	4 +3	5 +3	6 +3
		0 +2	1 +2	2 +2	3 +2	4 +2	5 +2	6 +2	7 +2
	0 +1	1 +1	2 +1	3 +1	4 +1	5 +1	6 +1	7 +1	8 +1
0 +0	1 +0	2 +0	3 +0	4 +0	5 +0	6 +0	7 +0	8 +0	9 +0
⓪	①	②	③	④	⑤	⑥	⑦	⑧	⑨

To play "Number Riddles" say, "I am an addition fact. My sum is 9. One of my numbers is 6. What is my other number?" Above ⑨ you will find the number called for.

Harder Number Riddles

If the addition facts in this table seem harder than those on page 180, study them carefully. Play the "Number Riddles" game exactly as you did on page 180. Practice until you can say the answer to each riddle.

9 +1								
8 +2	9 +2							
7 +3	8 +3	9 +3						
6 +4	7 +4	8 +4	9 +4					
5 +5	6 +5	7 +5	8 +5	9 +5				
4 +6	5 +6	6 +6	7 +6	8 +6	9 +6			
3 +7	4 +7	5 +7	6 +7	7 +7	8 +7	9 +7		
2 +8	3 +8	4 +8	5 +8	6 +8	7 +8	8 +8	9 +8	
1 +9	2 +9	3 +9	4 +9	5 +9	6 +9	7 +9	8 +9	9 +9
⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱

In each of the addition facts below, one of the numbers is missing. Say each missing number.

5	9	□	6	8	□	9	6	□
+4	+□	+5	+7	+□	+8	+6	+□	+9
□	13	12	□	17	15	□	15	16

To Help You Add Quickly and Well

Practice these "adding by endings" until you can say each answer quickly. If you have trouble, study pages 126–128.

Say or write the sums.

	a	b	c	d	e
1.	28 + 7	19 + 9	19 + 4	17 + 9	29 + 5
2.	23 + 8	17 + 7	13 + 8	28 + 2	27 + 3
3.	16 + 9	14 + 6	17 + 4	29 + 1	29 + 6
4.	29 + 7	19 + 2	27 + 8	13 + 9	16 + 5
5.	17 + 3	27 + 5	18 + 3	18 + 6	19 + 1
6.	25 + 8	16 + 7	19 + 8	26 + 6	25 + 9
7.	15 + 7	18 + 8	17 + 6	18 + 5	24 + 7
8.	17 + 5	22 + 8	16 + 8	21 + 9	25 + 5
9.	29 + 9	26 + 7	29 + 4	23 + 9	16 + 6
10.	22 + 9	25 + 7	19 + 7	26 + 8	27 + 9

Say or write the sums.

11.	15 + 6	14 + 9	18 + 9	29 + 2	28 + 6
12.	17 + 8	24 + 8	12 + 8	24 + 6	12 + 9
13.	27 + 6	18 + 4	28 + 8	26 + 9	28 + 3
14.	25 + 6	28 + 9	27 + 4	18 + 2	13 + 7
15.	15 + 8	18 + 7	28 + 4	23 + 7	15 + 9
16.	28 + 5	27 + 9	29 + 3	23 + 9	29 + 8
17.	24 + 7	15 + 5	19 + 6	11 + 9	14 + 7
18.	19 + 5	14 + 8	26 + 5	19 + 3	16 + 4

Carrying in Addition

1. Copy on the blackboard the additions shown below. Add aloud so all can hear how you carry. Watch how the carrying differs in each set of additions. Above each addition is the number of a helping page.

Set One	(117)	(116)	(127)	(150)	(103)	(158)	(151)	(151)
					5	25	239	514
	14	29	314	438	8	18	116	8
	+17	+43	+9	+216	+9	+39	+507	+29

Set Two	(142)	(164)	(164)
			253
	63	381	182
	+81	+264	+490

Set Three	(142)	(165)	(165)
			359
	89	487	176
	+58	+265	+284

2. In the first set of additions you carry from ones column to tens column. In the second set you carry from tens column to hundreds column. What do you carry in Set Three?

▶ Use folded paper. Write the sums. Check.

	1	1	1			
3.	359	47	725	394	853	468
	+28	+426	+9	+81	+72	+50
	1		11	1	1	
4.	647	509	448	379	296	192
	+138	+469	+274	+446	+571	+276
	1	1	2	21		1
5.	481	2 78	765	363	254	296
	63	194	80	285	387	160
	+152	+361	+72	+193	+246	+430

ADD

4	THINK
5	9
2	11
+8	19
19	

CHECK

4	19
5	15
2	10
+8	THINK

Adding and Checking in Column Addition

Jerry has sold 4 copies of "Young Readers Magazine," 5 "Boys' Adventures," 2 "Weekly News," and 8 "Modern Stories." He says he has sold 19 magazines in all. Check his adding. If you have trouble, study pages 133 and 134.

Every day Jerry writes down the number of each kind of magazine that he sells. He adds the numbers to find how many in all he sold that day.

Help Jerry by adding and checking.

	a	b	c	d	e	f	g	h	i	j
1.	5 3 9 +6	6 3 5 +6	4 6 3 +2	9 4 3 +5	4 2 3 +6	3 6 4 +5	4 1 8 +7	7 2 8 +4	9 3 4 +7	8 1 8 +3
2.	8 4 6 +2	6 1 9 +4	8 9 7 +6	4 8 7 +1	5 6 8 +3	4 8 7 +1	7 1 9 +5	8 2 5 +3	6 4 6 +7	8 7 2 +5

Rows

Column Addition with Two-Place Numbers

When the newspaper delivery truck brings papers, John counts the number for each paper boy and ties them in bundles. Then he finds how many papers there are in all.

1. Today there were 76 papers in one bundle, 85 in another, 35 in another, and 78 in a fourth bundle. How many papers were there in the four bundles?

Add ones column. Think, "11, 16, 24, or 2 tens and 4 ones." Write 4 in ones place in the sum. Carry 2 tens to tens place. Think, "9, 17, 20, 27, or 27 tens." Write 7 in tens place in the sum. Then think, "20 tens are 200." Write 2 in hundreds place in the sum. The sum is 274.

hundreds	tens	ones
	7	6
	8	5
	3	5
	+7	8
2	7	4

Add and check these bundles for John.

		1	2	2	1	2	2	
2.	31	96	65	29	38	24	12	32
	35	64	57	71	82	63	36	47
	46	92	78	86	63	96	47	35
	+93	+84	+15	+24	+82	+37	+67	+23
				210	265	220	162	137

Reviewing Column Addition

John knew that 0 in a column made the adding easier. (Read the first rule on page 62.) He could skip over the 0.

1. Add these columns.

6	0	4	8	73	60	324	209
0	8	7	5	24	97	309	124
4	9	0	6	30	52	130	300
+3	+6	+8	+0	+45	+54	+216	+225

John knew, too, that a blank space in a column made the adding easier. He could skip over the blank space.

2. Add these columns.

58	9	62	73	4	91	85	16
13	43	8	71	69	8	12	23
9	22	5	7	3	24	6	9
+24	+7	+16	+21	+5	+3	+39	+38

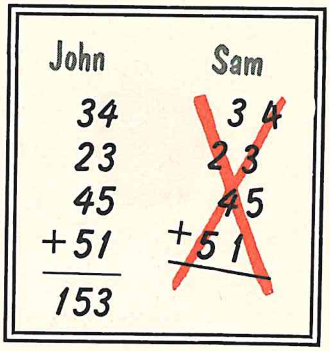
3. John counted Sunday papers. Here is what he wrote. How many papers were there in all?

463	Posts
27	Heralds
132	Suns
+359	Stars

4. Find how many Sunday papers in each of the following:

423	134	72	456	89	460
92	305	278	56	432	89
106	98	9	340	200	201
+27	+240	+165	+39	+6	+36

It Pays to Keep Columns Straight



John wrote his figures neatly in straight columns. It was easy for him to add and to get the right sum. The news stand man would not let him help unless he did good work.

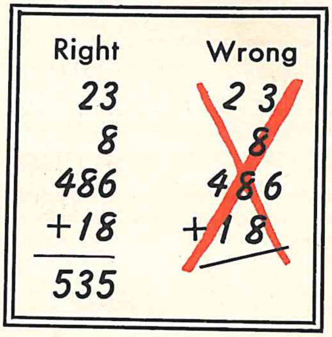
One day Sam helped at the news stand. His figures were not neat, and his columns were not straight. Because he was not careful, the sums were wrong. Can you guess why the news stand man did not want Sam to help another day?

Write neatly in straight columns and add.

1. 14, 32, 40   26, 33, 42, 15   310, 435, 240

2. 39, 17, 24   36, 40, 53, 67   281, 119, 426

Danger! Be extra careful in copying numbers that do not have the same number of figures in them. Keep the right-hand edge straight. There are no empty spaces in ones column.

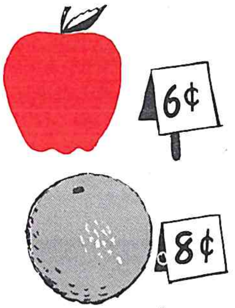


Write neatly in straight columns. Add.

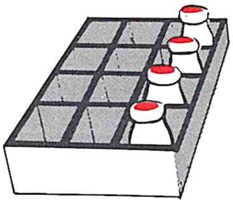
3. 7, 24, 32   9, 16, 33, 4   18, 231, 47, 219

4. 28, 6, 4   21, 6, 35, 2   121, 5, 247, 18

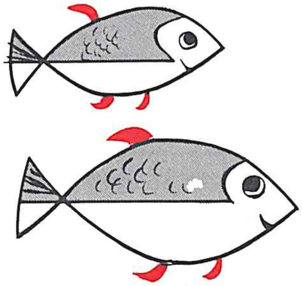
5. 35, 8, 43   30, 9, 3, 25   435, 22, 9, 117



How much more?



How many are needed?

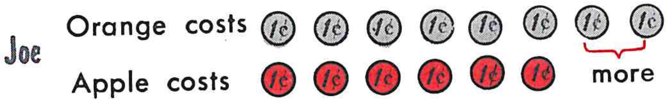


Find the difference.

Use Subtraction to Find the Difference

1. An apple costs 6¢. An orange costs 8¢. The orange costs how much more than the apple?

   Joe used his toy money. He showed the difference between 8¢ and 6¢.

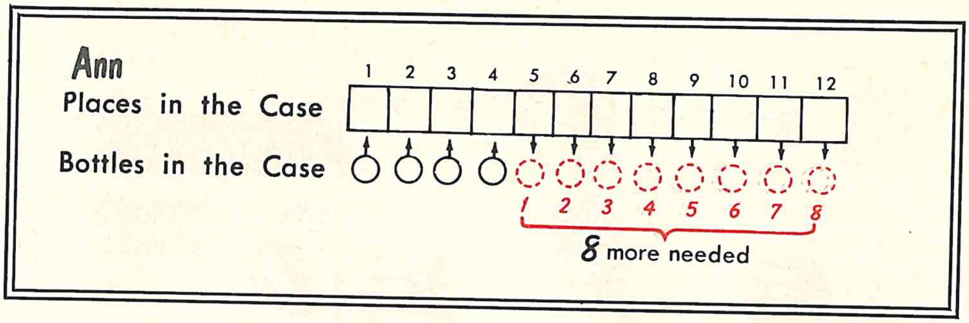


Bill

$$\begin{array}{r} 8\text{¢} \\ -6\text{¢} \\ \hline 2\text{¢} \end{array}$$ difference

   Bill showed the difference by using numbers. He subtracted 6¢ from 8¢. The difference is 2¢.

2. A daily newspaper costs 5¢. A Sunday paper costs 15¢. A Sunday paper costs how much more than a daily paper?
3. Tom helps at a grocery store. He puts empty milk bottles in cases. A case holds 12 bottles. If there are 4 bottles in a case, how many more are needed to fill the case? Explain the picture that Ann used to solve this problem. It is at the top of the next page.

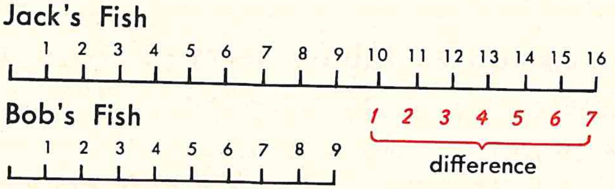


SUBTRACTION
12
−4
8 difference

To find the answer Ann can think, "4 and 8 more are 12," or "8 more are needed to make 4 equal 12," or "12 less 4 is 8."

4. Joan has 15¢. She wants to buy a doll costing 39¢. How many more cents does she need?

5. Jack caught a fish that was 16 in. long. Bob caught a fish that was 9 in. long. What was the difference in the lengths of the two fish?



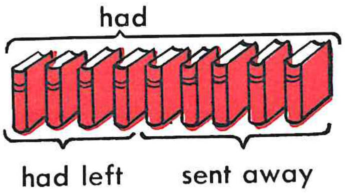
SUBTRACTION
16 in.
−9 in.
7 in. difference

6. Suppose Jack's fish was 25 in. long and Bob's 18 in. long. What would the difference in the lengths of the fish be?

7. Yesterday Jim saw a price of 98¢ on a bicycle headlight. Today the headlight is marked 79¢. What is the difference in the two prices? What will Jim save if he buys the headlight today?

You Subtract to Find How Many Are Left

1. The teacher had 9 library books. She sent 5 of them to the library. How many did she have left?



SUBTRACTION

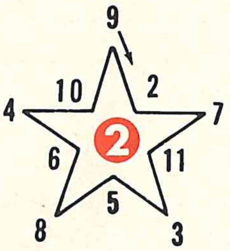
$$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array} \text{ difference}$$

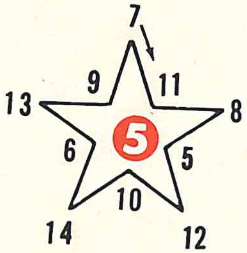
2. There were 37 books on the table. Jerry put 24 of them on a shelf. How many books were left on the table?
3. There were 48 notebooks on the table. The teacher gave 26 of them to the class. How many notebooks were left on the table?
4. There were 45 words written on the blackboard. Jane erased 23 of them. How many words remained?
5. Jack had 48 pencils to sharpen. He has sharpened 12 of them. How many are left to sharpen?
6. Thirteen children were helping the teacher. Eight of the children went home. How many remained?

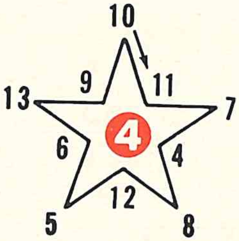
The 100 Subtraction Facts Told by the Stars

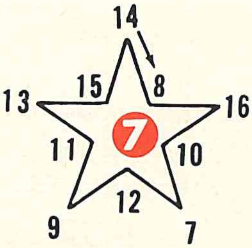
Subtract the number inside a star from each number on the outside. Begin at the arrow and go in the direction it points. Say only the remainders.

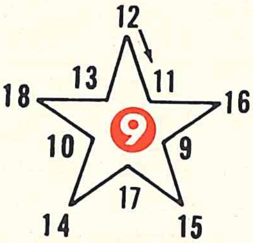
It is fun to have these stars copied on the blackboard and to give the answers quickly as someone points.

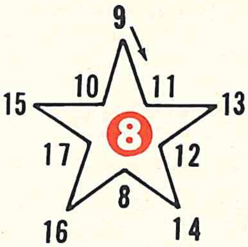


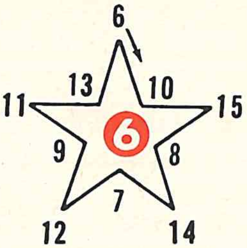


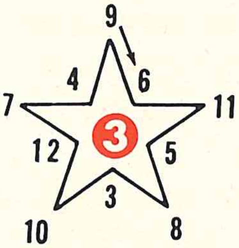


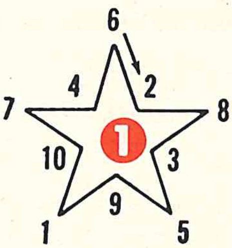


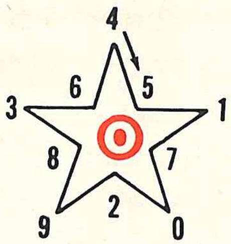












Subtraction with Borrowing

1. Mary had 85 spelling words to learn. She has learned 39 of them. How many words has she left to learn?

Mary subtracted 39 from 85 to find how many words she had left. This is how she subtracted:

In ones place, she could not take 9 ones from 5 ones. She borrowed 1 ten from the 8 tens in tens place. This made 15 ones. Then there were 7 tens in tens place.

THE SUBTRACTION	THE THINKING
$\begin{array}{r} 85 \\ -39 \\ \hline 46 \end{array}$ or $\begin{array}{rr} \overset{7}{\cancel{8}} & \enclose{circle}{{}^{1}5} \\ -3 & 9 \\ \hline 4 & 6 \end{array}$	$\begin{array}{rr} 7 & 15 \\ -3 & 9 \\ \hline 4 & 6 \end{array}$

Subtract. Think, "9 ones from 15 ones is 6 ones." Write the 6 in ones place. Think, "3 tens from 7 tens is 4 tens." Write the 4 in tens place. The difference is 46.

▶ ~~Use folded paper.~~ Write the differences.

2.	71 −43	90 −38	62 −25	45 −26	53 −18	42 −27	54 −36	97 −48
3.	58 −19	62 −24	71 −38	95 −47	53 −26	70 −53	74 −27	96 −69
4.	75 −48	51 −23	64 −37	33 −17	42 −16	86 −29	73 −45	91 −75
5.	84 −18	57 −29	91 −56	86 −37	56 −38	72 −58	95 −39	64 −35

Borrowing When Subtracting Longer Numbers

1. Mr. West has gone 127 miles of a 980-mile trip. How many more miles does he have to go?

You cannot take 7 ones from 0. Borrow 1 ten from the 8 tens in tens place. This makes 10 ones. There are now 7 tens in tens place. Subtract.

THE SUBTRACTION

$$\begin{array}{r} 980 \\ -127 \\ \hline 853 \end{array} \quad \text{or} \quad \begin{array}{rrr} 9 & \overset{7}{\cancel{8}} & \textcircled{{}^{1}0} \\ -1 & 2 & 7 \\ \hline 8 & 5 & 3 \end{array}$$

THE THINKING

$$\begin{array}{rrr} 9 & 7 & 10 \\ -1 & 2 & 7 \\ \hline 8 & 5 & 3 \end{array}$$

▶ Use folded paper. Find the differences.

2. $\begin{array}{r} 673 \\ -249 \\ \hline \end{array} \quad \begin{array}{r} 784 \\ -255 \\ \hline \end{array} \quad \begin{array}{r} 635 \\ -218 \\ \hline \end{array} \quad \begin{array}{r} 871 \\ -516 \\ \hline \end{array} \quad \begin{array}{r} 585 \\ -327 \\ \hline \end{array} \quad \begin{array}{r} 783 \\ -429 \\ \hline \end{array} \quad \begin{array}{r} 852 \\ -346 \\ \hline \end{array}$

3. $\begin{array}{r} 495 \\ -356 \\ \hline \end{array} \quad \begin{array}{r} 531 \\ -128 \\ \hline \end{array} \quad \begin{array}{r} 685 \\ -349 \\ \hline \end{array} \quad \begin{array}{r} 592 \\ -247 \\ \hline \end{array} \quad \begin{array}{r} 875 \\ -329 \\ \hline \end{array} \quad \begin{array}{r} 547 \\ -418 \\ \hline \end{array} \quad \begin{array}{r} 233 \\ -115 \\ \hline \end{array}$

4. $\begin{array}{r} 781 \\ -437 \\ \hline \end{array} \quad \begin{array}{r} 946 \\ -529 \\ \hline \end{array} \quad \begin{array}{r} 645 \\ -328 \\ \hline \end{array} \quad \begin{array}{r} 594 \\ -246 \\ \hline \end{array} \quad \begin{array}{r} 553 \\ -125 \\ \hline \end{array} \quad \begin{array}{r} 892 \\ -447 \\ \hline \end{array} \quad \begin{array}{r} 947 \\ -318 \\ \hline \end{array}$

5. $\begin{array}{r} 384 \\ -137 \\ \hline \end{array} \quad \begin{array}{r} 692 \\ -248 \\ \hline \end{array} \quad \begin{array}{r} 782 \\ -454 \\ \hline \end{array} \quad \begin{array}{r} 847 \\ -539 \\ \hline \end{array} \quad \begin{array}{r} 540 \\ -224 \\ \hline \end{array} \quad \begin{array}{r} 657 \\ -309 \\ \hline \end{array} \quad \begin{array}{r} 736 \\ -218 \\ \hline \end{array}$

6. $\begin{array}{r} 345 \\ -326 \\ \hline \end{array} \quad \begin{array}{r} 243 \\ -209 \\ \hline \end{array} \quad \begin{array}{r} 760 \\ -751 \\ \hline \end{array} \quad \begin{array}{r} 133 \\ -128 \\ \hline \end{array} \quad \begin{array}{r} 540 \\ -533 \\ \hline \end{array} \quad \begin{array}{r} 744 \\ -715 \\ \hline \end{array} \quad \begin{array}{r} 887 \\ -878 \\ \hline \end{array}$

Borrowing in Tens Place

1. Mr. Smith has gone 248 miles of a 629-mile trip. How many more miles does he need to go?

In tens place, you cannot take 4 tens from 2 tens. Borrow 1 hundred from the 6 hundreds in hundreds place. There are now 12 tens in tens place. There are 5 hundreds in hundreds place. Subtract.

THE SUBTRACTION

$$\begin{array}{r} 629 \\ -248 \\ \hline 381 \end{array} \quad \text{or} \quad \begin{array}{rrr} \overset{5}{\cancel{6}} & \overset{1}{\textcircled{2}} & 9 \\ -2 & 4 & 8 \\ \hline 3 & 8 & 1 \end{array}$$

THE THINKING

$$\begin{array}{rrr} 5 & 12 & 9 \\ -2 & 4 & 8 \\ \hline 3 & 8 & 1 \end{array}$$

Use folded paper. Find the differences.

2.	739	647	516	752	537	650	758
	−255	−192	−321	−561	−246	−270	−184
3.	648	739	517	406	717	668	462
	−256	−143	−325	−212	−164	−375	−281
4.	857	658	439	538	743	586	385
	−383	−374	−256	−382	−251	−191	−192
5.	726	354	958	617	433	729	535
	−82	−70	−85	−42	−341	−684	−440
6.	767	626	576	836	584	635	429
	−192	−544	−95	−751	−90	−574	−359

Sometimes We Have to Borrow Twice

1. Mr. Brown has gone 489 miles of a 736-mile trip. How many more miles does he need to go?

The Thinking in Two Steps

$$\begin{array}{r} 736 \\ -489 \\ \hline 247 \end{array} \qquad \overset{\text{Step One:}}{\begin{array}{ccc} 7 & 2 & 16 \\ 4 & 8 & 9 \\ \hline \end{array}} \qquad \overset{\text{Step Two:}}{\begin{array}{ccc} 6 & 12 & 16 \\ 4 & 8 & 9 \\ \hline 2 & 4 & 7 \end{array}} \qquad \text{or} \qquad \begin{array}{cccc} & \overset{6}{\cancel{7}} & \overset{\textcircled{12}}{\cancel{3}} & \textcircled{{}^{1}6} \\ - & 4 & 8 & 9 \\ \hline & 2 & 4 & 7 \end{array}$$

In ones place you cannot take 9 ones from 6 ones.

First Step: Borrow 1 ten from the 3 tens in tens place. This makes 16 ones. There are now 2 tens in tens place.

In tens place you cannot take 8 tens from 2 tens.

Second Step: Borrow 1 hundred from the 7 hundred in hundreds place. This makes 12 tens. There are now 6 hundreds in hundreds place. Subtract.

Copy

▶ Use folded paper. Find the differences.

2.	534 −265	947 −489	623 −146	472 −293	722 −347	854 −478	291 −138
3.	528 −343	369 −154	446 −129	735 −482	364 −123	543 −167	621 −335
4.	634 −479	713 −236	637 −448	364 −175	274 −238	546 −462	752 −687
5.	463 −37	333 −92	856 −87	817 −745	593 −67	331 −74	925 −827

Using Subtraction

1. Tom helped in his father's store. Find how much change he must give to Mrs. Brown if she spent $1.25 and gave Tom $2.00.

$$\boxed{\begin{array}{r} \$2.00 \\ -1.25 \\ \hline \end{array}}$$

Tom used subtraction to check the change he gave Mrs. Brown. He wrote the subtraction question this way:

To find the answer to the question, Tom had to use two steps. He could not subtract 5 from 0 in cents column. He had to borrow 1 dime, or 10 cents, from dimes column. But there were 0 dimes in dimes column.

$$\boxed{\begin{array}{r} \$\overset{1}{\cancel{2}}.\textcircled{${}^{1}0$}0 \\ -1.\,2\,5 \\ \hline \\ \$1\,.\overset{9}{\cancel{10}}\textcircled{${}^{1}0$} \\ -1\,.\,2\,5 \\ \hline \$\quad.\,7\,5 \end{array}}$$

First Step: Tom had to borrow ten dimes from dollars column. Now he had 1 dollar, 10 dimes, and 0 cents.

Second Step: Now Tom could borrow from dimes column. Then he had 1 dollar, 9 dimes, and 10 cents. He subtracted to find the answer.

Find how much change each person got back in these examples.

2. $\begin{array}{r}\$3.50\\-3.25\\\hline\end{array}$ $\quad\begin{array}{r}\$5.00\\-4.35\\\hline\end{array}$ $\quad\begin{array}{r}\$3.00\\-2.01\\\hline\end{array}$ $\quad\begin{array}{r}\$5.00\\-4.65\\\hline\end{array}$ $\quad\begin{array}{r}\$9.50\\-9.35\\\hline\end{array}$ $\quad\begin{array}{r}\$1.00\\-.79\\\hline\end{array}$

3. $\begin{array}{r}\$1.50\\-1.35\\\hline\end{array}$ $\quad\begin{array}{r}\$2.50\\-2.13\\\hline\end{array}$ $\quad\begin{array}{r}\$1.90\\-1.87\\\hline\end{array}$ $\quad\begin{array}{r}\$7.50\\-7.36\\\hline\end{array}$ $\quad\begin{array}{r}\$8.25\\-8.10\\\hline\end{array}$ $\quad\begin{array}{r}\$9.75\\-9.73\\\hline\end{array}$

Problems About Raising Tomatoes

1. Tom's grandfather raised nine thousand five hundred seventy-five little tomato plants. Write this number in figures.

— 2. Grandfather put 525 little tomato plants in a box. He marked them "For Sale." He sold 384 plants the first day. How many were left in the box?

+ 3. Tom helped sell the plants. He sold 48 plants to the first buyer, 60 plants to the second buyer, and 96 to the last. How many plants in all did he sell?

— 4. Grandfather put 650 plants in small bundles to sell the next day. The next day he found that 288 of the plants had died. How many were alive?

+ 5. Tom said he was paid \$.25, \$.75, \$.50, and \$1.25 for the plants he sold. How much did he get for all the plants?

6. Help Grandfather add his sales.

Monday	Tuesday	Wednesday	Thursday	Friday
\$3.25	\$2.55	\$3.50	\$ .75	\$ .25
6.00	1.75	.50	3.75	1.25
+.50	+.50	+2.75	+1.75	+4.25

Empty Spaces in Subtraction

1. Mary must print 675 tickets for a show. She has printed 43 tickets. How many more must she do?

To find the answer, you must find the difference between 43 and 675. Think, "3 ones from 5 ones." Write 2 in ones place. Think, "4 tens from 7 tens." Write 3 in tens place. There is an empty space under the 6 in 675. Think, "0 hundreds from 6 hundreds." Write 6 in hundreds place. The difference is 632.

SUBTRACTION

$$\begin{array}{rl} 675 & \\ -43 & \\ \hline 632 & \text{difference} \end{array}$$

2.	374	773	179	340	463	572	986
	−52	−61	−36	−20	−41	−32	−75

3. Jerry counted 259 tickets that Mary had printed. He found 6 tickets that could not be used. How many of the 259 tickets were good?

To find the answer you must find the difference between 6 and 259. Think, "6 ones from 9 ones." Write 3 in ones place. There is an empty space under the 5 in 259. Think, "0 tens from 5 tens." Write 5 in tens place. There is an empty space under the 2 in 259. Think, "0 hundreds from 2 hundreds." Write 2 in hundreds place.

SUBTRACTION

$$\begin{array}{rl} 259 & \\ -6 & \\ \hline 253 & \text{difference} \end{array}$$

4.	769	546	957	164	376	297	542
	−7	−4	−5	−9	−8	−9	−6

5. Mary counted the tickets she had made. She found she

had printed 625 tickets. How many more must she print to have 675 tickets?

To find the answer, you must find the difference between 625 and 675. Think, "5 ones from 5 ones." Write 0 in ones place. Think, "2 tens from 7 tens." Write 5 in tens place. Think, "6 hundreds from 6 hundreds." Do not write this 0. The empty place in the difference shows there are no hundreds.

SUBTRACTION

$$\begin{array}{r} 675 \\ -625 \\ \hline 50 \end{array}$$ difference

6.

384	673	436	853	786	947	485
−324	−621	−410	−823	−756	−907	−462

7. Mary thought she was finished. She counted the tickets. She had only 671. How many more does she need to make 675 tickets?

She found the difference between 671 and 675. She thought, "1 one from 5 ones is 4 ones." She wrote 4 in ones place. She knew that 7 tens from 7 tens left no tens. She knew the 6 hundreds from 6 hundreds left no hundreds. Because there were no tens or hundreds, she did not write 0 in tens or hundreds place.

SUBTRACTION

$$\begin{array}{r} 675 \\ -671 \\ \hline 4 \end{array}$$ difference

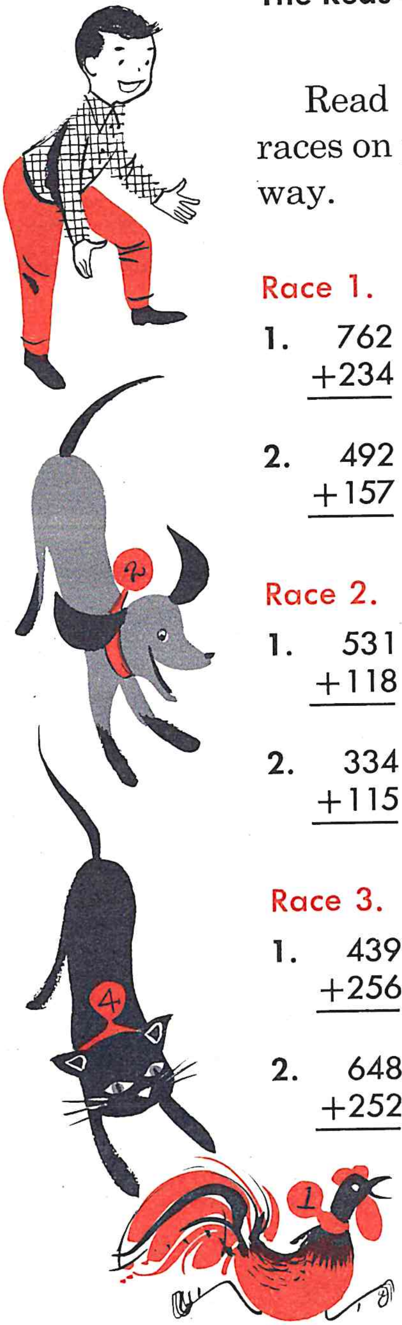
8.

568	729	598	415	823	655	157
−563	−720	−595	−412	−820	−654	−152

9.

943	461	756	635	362	534	826
−8	−29	−48	−627	−126	−521	−819

The Reds and the Blues Race Again



Read the directions for the addition races on page 94. Do these races the same way.

Race 1. Write the sums quickly.

1. $\begin{array}{r}762\\+234\\\hline\end{array}$ $\begin{array}{r}345\\+127\\\hline\end{array}$ $\begin{array}{r}631\\+215\\\hline\end{array}$ $\begin{array}{r}343\\+526\\\hline\end{array}$ $\begin{array}{r}580\\+234\\\hline\end{array}$

2. $\begin{array}{r}492\\+157\\\hline\end{array}$ $\begin{array}{r}483\\+338\\\hline\end{array}$ $\begin{array}{r}673\\+249\\\hline\end{array}$ $\begin{array}{r}584\\+255\\\hline\end{array}$ $\begin{array}{r}635\\+218\\\hline\end{array}$

Race 2. Write the sums quickly.

1. $\begin{array}{r}531\\+118\\\hline\end{array}$ $\begin{array}{r}384\\+349\\\hline\end{array}$ $\begin{array}{r}593\\+247\\\hline\end{array}$ $\begin{array}{r}276\\+329\\\hline\end{array}$ $\begin{array}{r}547\\+418\\\hline\end{array}$

2. $\begin{array}{r}334\\+115\\\hline\end{array}$ $\begin{array}{r}781\\+137\\\hline\end{array}$ $\begin{array}{r}246\\+529\\\hline\end{array}$ $\begin{array}{r}645\\+328\\\hline\end{array}$ $\begin{array}{r}594\\+246\\\hline\end{array}$

Race 3. Write the sums quickly.

1. $\begin{array}{r}439\\+256\\\hline\end{array}$ $\begin{array}{r}538\\+382\\\hline\end{array}$ $\begin{array}{r}243\\+251\\\hline\end{array}$ $\begin{array}{r}580\\+191\\\hline\end{array}$ $\begin{array}{r}343\\+552\\\hline\end{array}$

2. $\begin{array}{r}648\\+252\\\hline\end{array}$ $\begin{array}{r}559\\+380\\\hline\end{array}$ $\begin{array}{r}228\\+564\\\hline\end{array}$ $\begin{array}{r}475\\+283\\\hline\end{array}$ $\begin{array}{r}357\\+486\\\hline\end{array}$

Race 4. Find the differences quickly.

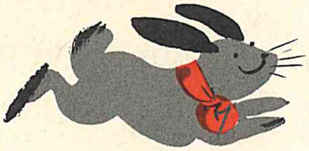
1.	637 −454	432 −272	459 −178	836 −640	522 −241
2.	369 −175	451 −271	945 −633	482 −291	978 −784
3.	613 −321	424 −182	794 −458	632 −251	737 −565

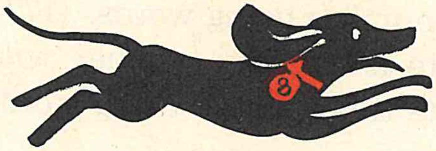
Race 5. Write the differences quickly.

1.	423 −173	572 −281	843 −750	876 −849	431 −292
2.	579 −484	630 −137	506 −209	962 −385	361 −282
3.	473 −62	751 −80	450 −28	654 −87	739 −59

Race 6. Write the differences quickly.

1.	$1.50 −1.40	$2.75 −2.56	$4.50 −4.34	$3.00 −2.01	$1.00 −.79
2.	$1.75 −1.52	$4.25 −4.10	$5.00 −4.65	$9.50 −9.35	$5.75 −5.60
3.	$2.50 −2.13	$1.90 −1.87	$7.50 −7.36	$8.25 −8.10	$9.75 −9.73





How Well Have You Learned?

Use folded paper. Write only the answers.

1.	9	8	3	74	83	346	298
	+6	+7	+8	+69	+46	+530	+437

(142, 165, 183)

2.	7	9	8	57	44	281	189
	5	4	3	84	63	413	367
	+6	+5	+7	+98	+28	+279	+246

(100, 160, 164, 183)

3.	9	7	6	49	54	384	769
	−4	−2	−5	−33	−24	−140	−535

(91, 93)

4.	17	15	13	129	168	637	929
	−9	−6	−7	−42	−95	−243	−555

(194, 198)

5.	22	35	44	51	60	631	753
	−4	−9	−7	−8	−3	−129	−424

(193)

6. Write these numbers in figures. (175–177)

seven thousand eight hundred sixty-seven

nine thousand fifty three thousand four

7. Write a 4-figure number with 0 in ones place. Write this number using words. (177)

8. Write a 4-figure number with 0 in tens place. Write this number using words. (177)

9. Write a 4-figure number with 0 in hundreds place. Write this number using words. (177)

Helping Yourself

1. Can you say or write the 100 addition facts in three minutes? (88, 180, 181, 315)
2. Can you add by endings quickly? (126–128, 182)
3. Can you add single columns correctly? (99, 100, 103, 133, 184)
4. Can you add double columns quickly? (101, 128, 135, 158, 159, 185)
5. Can you add with carrying?
    (Carrying to tens place: 116, 117, 127, 150, 151, 183)
    (Carrying to hundreds place: 141, 142, 164)
    (Carrying twice: 165)
6. Do you write numbers neatly in straight columns? (187)
7. Can you check addition? (99, 101, 179, 184)
8. Can you say or write the 100 subtraction facts in three minutes? (89, 161, 191, 318)
9. Can you subtract with borrowing?
    (From tens place: 118–119, 162, 192–193)
    (From hundreds place: 168, 194)
    (Borrowing twice: 170, 195)
10. Can you check subtraction? (163)
11. Can you read and write numbers? (26, 27, 149, 175–178)
12. What questions can you answer by subtracting? (188–190)

How Well Are You Doing?

1. Mr. Brown drove his car 35 miles per hour in the city. In the country he drove 48 miles per hour. How much faster per hour did he drive in the country?
2. The speedometer on Mr. Bell's car shows eight thousand forty-three miles. Write this number in figures.
3. Mr. Bell bought $5.75 worth of gasoline. How much change will he get back if he gives the filling station man $10.00?
4. Last week Mr. Smith paid $3.00 for an oil change in his car. He also bought a tire for $18.75. How much did he pay in all?
5. Mr. Bell is making a trip of 354 miles. He has now traveled 347 miles. How many more miles must he go?

Use folded paper. Write the answers.

6.	286 +364	507 +27	163 +9	698 +4	356 +82	437 +65	540 +70
7.	327 −178	632 −314	847 −83	534 −76	784 −18	463 −5	604 −6

Vend

UNIT EIGHT

Using Numbers to Answer Questions

1. Jane gave Mary a birthday present. There were four boxes in it. Mary opened the first box. She said, "Oh, soap cats! Twelve soap cats!"

   Do you think Mary had the right number? Use two ways to show that she was right or wrong.
2. How do you think she found out how many in all?
3. How many soap cats are there in the boxes that Mary has not yet opened? Show in two ways that your answer is correct.
4. Think again about Mary's soap cats. To find how many she received, you must answer one of these questions: "How many are 3 + 3 + 3 + 3?" or "How many are four 3's?" Which question is shorter?
5. Write two number questions that might be used for problem 3.

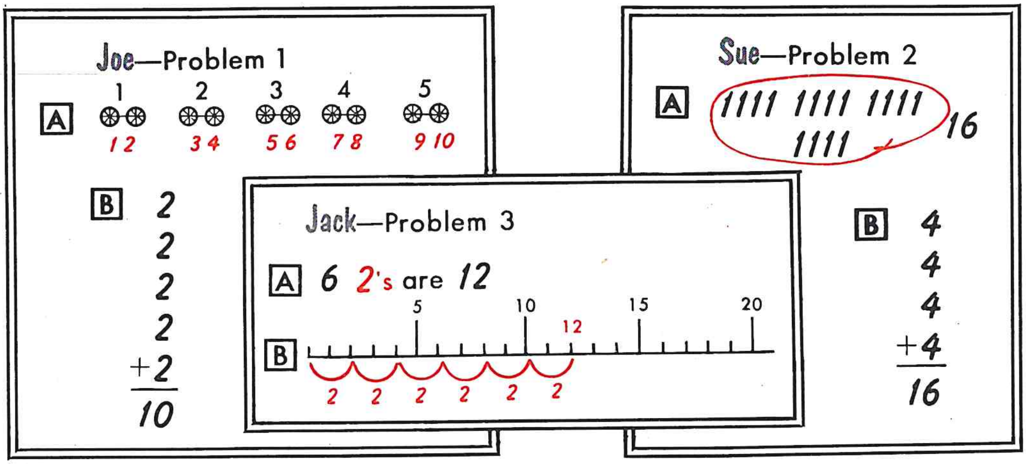
■ **Number questions like "How many are four 3's?" are called multiplication number questions.**

6. What kind of number question is "How many are 3 + 3 + 3 + 3?"

Answering Number Questions

Write the number question for each problem. Then answer it. Show in two ways, or more, that your answer is correct.

1. How many wheels are needed to make five two-wheeled bicycles?
2. There are 4 cakes in a box. How many cakes are there in 4 such boxes?
3. Jack can carry only two chairs at a time. How many chairs can he carry in six trips?
4. Ann weighed her arithmetic book. It weighed 2 pounds. How much will 4 arithmetic books weigh?
5. Every day Henry walks 3 miles in going to and from school. How far does he walk in going to and from school in 5 days?
6. The children whose work is pictured below used two ways to show that their answers to questions 1, 2, and 3 were correct. What number fact does each show?

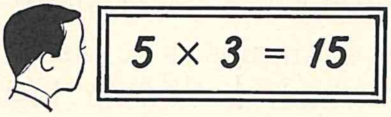


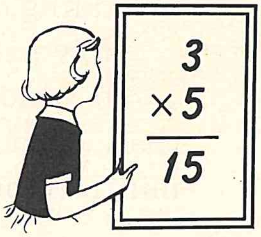
Multiplication Facts

1. On page 206 each number fact lettered A is called a multiplication fact. The first one is "Five twos are ten" or "Five twos equal ten." What multiplication fact has Sue shown? Read the multiplication fact that Jack has written.

■ **A multiplication question with its answer is called a multiplication fact.**

2. Write the multiplication number facts for problems 3, 4, and 5 on page 206.
3. The multiplication fact, "Five threes are 15," may be written using numbers and signs. There are two ways to write it. Look at them carefully.





4. Write the fact, "Seven twos are 14," two ways using numbers.

Write each of these multiplication facts two other ways:

5. Six 2's = 12

6. $\begin{array}{r} 2 \\ \times 4 \\ \hline 8 \end{array}$

7. Nine 2's = 18

8. 4 × 4 = 16

9. 2 × 4 = 8

10. $\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$

11. 3 × 2 = 6

12. Seven 3's = 21

13. $\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$

14. $\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$

Multiplying Numbers

1. When you think the answer to number questions like "How many are three 5's?" you are multiplying. What are two other ways to answer this question?

Find the answer to number questions 2 through 10 by multiplying. Check answers by adding or counting.

2. How many are three 2's?
3. How many are five 3's?
4. How many are seven 2's?
5. How many are five 5's?

6. $\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$ 7. $\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$ 8. $\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$ 9. $\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$ 10. $\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$

11. You often get an answer faster by multiplying than by adding. Read these examples:

How many are eight 3's? How many are two 3's?

In which of the examples is it faster to multiply than to add? In which is adding just as fast as multiplying? Why?

No Pencils, Please!

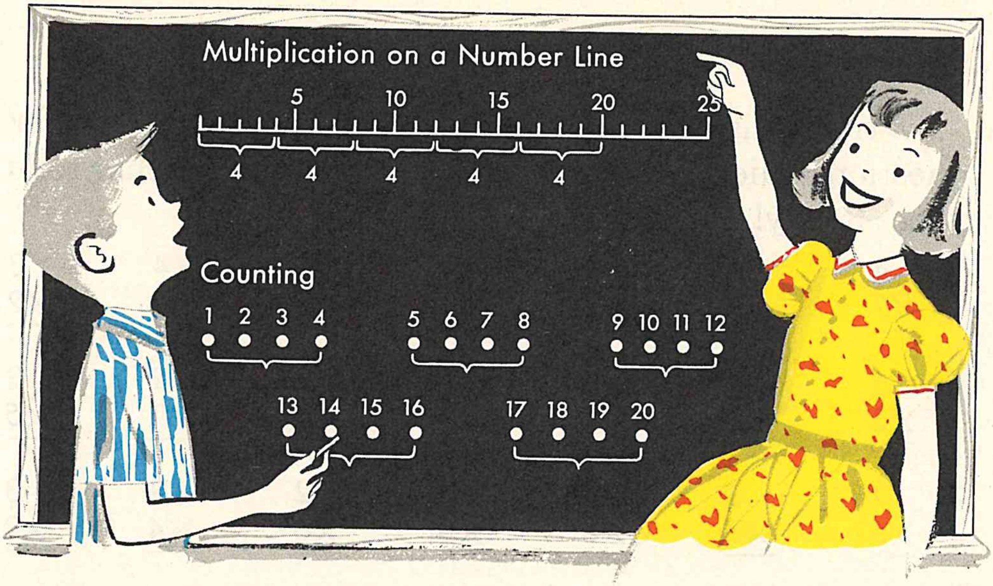
1. In the number 271 what figure is in tens place?
2. How many are left when you take 200 from 600?
3. Seven tens are equal to how many ones?

Read these number questions. Answer them:

4. $\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$ 5. $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$ 6. $\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$ 7. $\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$ 8. $\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$

9. What number is shown on the place-value chart?

thousands	hundreds	tens	ones
///	//		////



Different Ways of Showing Multiplication Facts

1. In the picture above the same multiplication fact is shown in two ways. What is the fact?
2. Use a number line. Show that three 4's = 12.
3. Use adding and counting. Show that three 4's = 12.
4. Find how many four 3's are by adding. By counting. By using the number line. Which way is fastest?
5. Show these facts. Use adding and counting.

Three 5's = 15
Four 4's = 16
Two 2's = 4
Three 6's = 18

For number questions 6 through 9 multiply, or just think the answer. Add or count to find any answer you do not know.

6. How many are eight 2's?
7. How many are four 5's?

8. $\begin{array}{r}3\\ \times 6\\ \hline\end{array}$

9. $\begin{array}{r}2\\ \times 4\\ \hline\end{array}$

Answering Multiplication Questions Quickly

Write answers to these multiplication number questions quickly. Start and stop when your teacher tells you. Ready!

1.	$\begin{array}{r}4\\ \times 2\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 3\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 3\\ \hline\end{array}$	$\begin{array}{r}4\\ \times 4\\ \hline\end{array}$	$\begin{array}{r}5\\ \times 2\\ \hline\end{array}$	$\begin{array}{r}4\\ \times 5\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 2\\ \hline\end{array}$
2.	$\begin{array}{r}6\\ \times 2\\ \hline\end{array}$	$\begin{array}{r}8\\ \times 3\\ \hline\end{array}$	$\begin{array}{r}5\\ \times 4\\ \hline\end{array}$	$\begin{array}{r}4\\ \times 3\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 4\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 9\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 5\\ \hline\end{array}$
3.	$\begin{array}{r}2\\ \times 5\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 7\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 8\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 5\\ \hline\end{array}$	$\begin{array}{r}2\\ \times 6\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 4\\ \hline\end{array}$	$\begin{array}{r}3\\ \times 2\\ \hline\end{array}$

To answer quickly you must know the answer to each multiplication question. Learn the answers you do not know. Here are some ways to study and learn the multiplication facts.

How to Study Multiplication Facts

- Read the fact over and over. For $\begin{array}{r}2\\ \times 7\\ \hline 14\end{array}$ say, "Seven 2's = 14, seven 2's = 14," and so on. Then cover the fact. See if you can write it correctly.
- Write multiplication number questions. Then write the answers to the questions.
- Show multiplication facts on the number line.
- Make multiplication helper cards. Study them.
- Cover the answer. Try to give the answer. Then see if you got it right.

St

4. Read each of these multiplication facts. Say several times any fact that you do not know well. The first fact is read, "Three 5's equal 15."

$$\begin{array}{rrrrrrrr} 5 & 4 & 2 & 3 & 5 & 2 & 5 & 4 \\ \times 3 & \times 2 & \times 5 & \times 6 & \times 6 & \times 7 & \times 2 & \times 6 \\ \hline 15 & 8 & 10 & 18 & 30 & 14 & 10 & 24 \end{array}$$

$$\begin{array}{rrrrrrrr} 2 & 4 & 5 & 3 & 3 & 4 & 2 & 3 \\ \times 3 & \times 7 & \times 9 & \times 3 & \times 8 & \times 5 & \times 6 & \times 4 \\ \hline 6 & 28 & 45 & 9 & 24 & 20 & 12 & 12 \end{array}$$

$$\begin{array}{rrrrrrrr} 4 & 3 & 5 & 2 & 5 & 3 & 4 & 2 \\ \times 8 & \times 2 & \times 8 & \times 9 & \times 4 & \times 9 & \times 3 & \times 4 \\ \hline 32 & 6 & 40 & 18 & 20 & 27 & 12 & 8 \end{array}$$

$$\begin{array}{rrrrrrrr} 5 & 2 & 4 & 5 & 3 & 2 & 3 & 4 \\ \times 7 & \times 8 & \times 9 & \times 5 & \times 7 & \times 2 & \times 5 & \times 4 \\ \hline 35 & 16 & 36 & 25 & 21 & 4 & 15 & 16 \end{array}$$

5. Learn the facts given above. You can learn them well if you use these steps. Read the fact. Then close your eyes. Say the fact several times. Think how the fact looked on this page. Open your eyes. Does the fact look as you thought it did?

6. Use folded paper. Cover the answers to the first row of facts above. Write the answers. Move your paper. Are your answers correct? Do the other rows in the same way.

7. Write in a row on your paper the facts you missed. Study them. Then write them again.

Make helper cards for the thirty-two multiplication facts above. Play games like the ones on page 41.

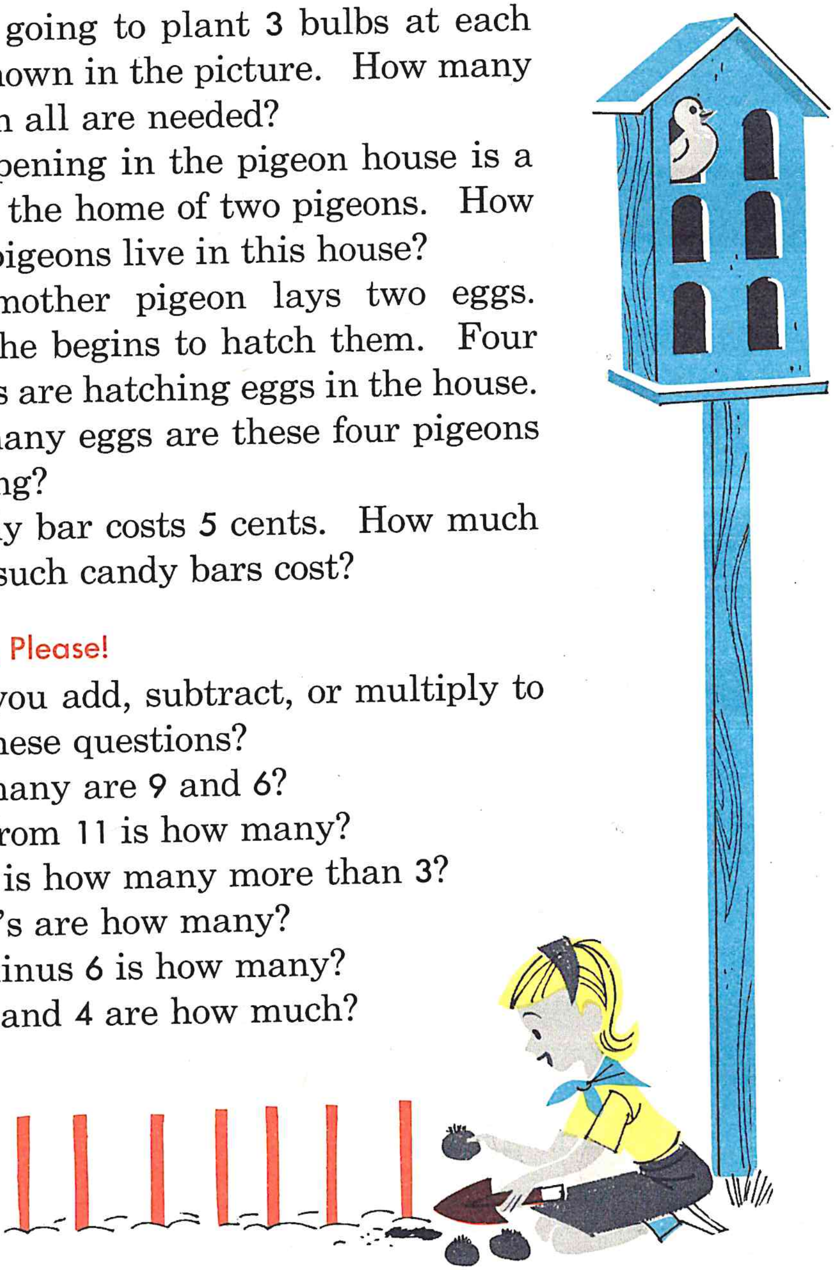
Multiplication Problems

1. Ann is going to plant 3 bulbs at each stick shown in the picture. How many bulbs in all are needed?
2. Each opening in the pigeon house is a door to the home of two pigeons. How many pigeons live in this house?
3. Each mother pigeon lays two eggs. Then she begins to hatch them. Four pigeons are hatching eggs in the house. How many eggs are these four pigeons hatching?
4. A candy bar costs 5 cents. How much will 7 such candy bars cost?

No Pencils, Please!

Must you add, subtract, or multiply to answer these questions?

1. How many are 9 and 6?
2. Four from 11 is how many?
3. Seven is how many more than 3?
4. Five 7's are how many?
5. Ten minus 6 is how many?
6. Eight and 4 are how much?



Multiplication Practice

Multiply. Write answers on folded paper.

1.	3 ×7	2 ×4	5 ×4	2 ×7	6 ×2	5 ×3	4 ×6	2 ×9
2.	4 ×8	3 ×9	2 ×6	4 ×4	3 ×2	2 ×8	2 ×3	4 ×7
3.	2 ×2	3 ×6	2 ×5	3 ×3	4 ×5	3 ×4	4 ×2	4 ×3

4. Think and say the answers to these questions:

6 × 3 = ?	4 × 5 = ?	6 × 2 = ?	2 × 4 = ?
5 × 5 = ?	9 × 5 = ?	4 × 3 = ?	3 × 5 = ?
2 × 2 = ?	4 × 4 = ?	2 × 5 = ?	7 × 4 = ?

5. Cover the fact side of each pair. Think the answer to the question. Then, uncover the fact. See if you were correct.

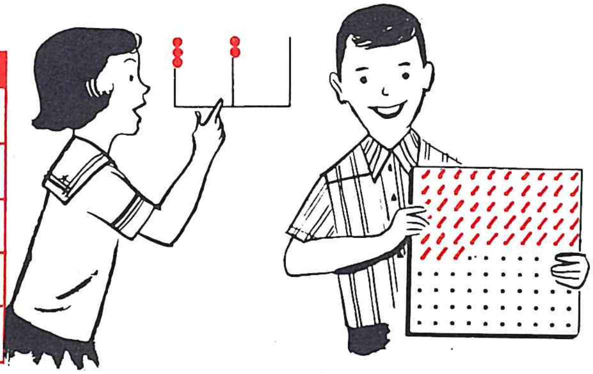
4 *×6*	*4* *×6* *24*	*2* *×8*	*2* *×8* *16*	*3* *×4*	*3* *×4* *12*
3 *×7*	*3* *×7* *21*	*4* *×9*	*4* *×9* *36*	*3* *×9*	*3* *×9* *27*
5 *×9*	*5* *×9* *45*	*4* *×8*	*4* *×8* *32*	*4* *×7*	*4* *×7* *28*

6. Draw number lines. Show these facts.

7 × 2 = 14 4 × 5 = 20 6 × 3 = 18

Place-Value Chart

	hundreds	tens	ones
A	//	/	//////
B	///		
C	/		///////
D		//	////
E	//////	/	



Thinking About the Meaning of Numbers

1. What number does row A in the place-value chart show? Row B? Row C? Row D? Row E?
2. Fifteen tens are equal to what number?
3. How many marks would you use to show the number seven hundred on the place-value chart?
4. What number does the abacus show?
5. How many markers would you use to show the number fifteen on the abacus?
6. What number is shown on the peg board?
7. To show that the number 63 equals 6 tens and 3 ones, would you use the peg board or the abacus?
8. To show that the number 32 equals thirty-two ones, would you use the peg board or the abacus?

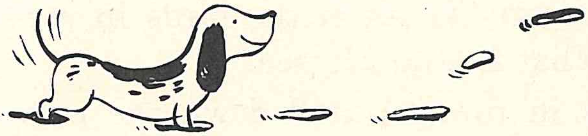
Write these numbers: 1 2 3 4 5 6 7 8 9 10

Copy the numbers five times. Try to write them well. Use your regular speed in writing.

Compare your figures with those on page 2. Do you write your figures correctly? Keep these samples of your writing.

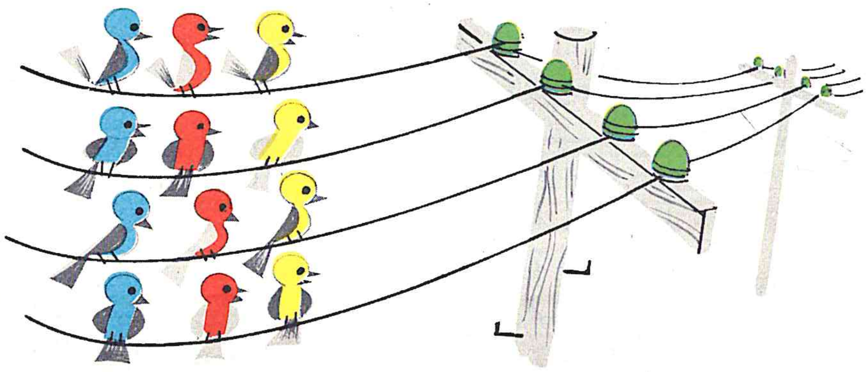
Table for Multiplying 2's

	2	2	2	2	2	2	2	2	2
1 × 2 = 2		2	2	2	2	2	2	2	2
2 × 2 = 4			2	2	2	2	2	2	2
3 × 2 = 6				2	2	2	2	2	2
4 × 2 = 8					2	2	2	2	2
5 × 2 = 10						2	2	2	2
6 × 2 = 12							2	2	2
7 × 2 = 14								2	2
8 × 2 = 16									2
9 × 2 = 18									



Use the table to find or check answers.

1. The children made snowmen. They used marbles for eyes. How many marbles did they need for 6 snowmen?
2. Joe put 2 sheets of paper on each table. How many sheets did he put on 4 tables?
3. A mother knit a pair of mittens for each of her three children. How many mittens did she knit?
4. How many are seven 2's?
5. Six 2's equal how many?
6. $\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$
7. $\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$
8. Is it easier to use the addition or the multiplication part of the table to check answers?
9. Make a table for multiplying and adding 3's.

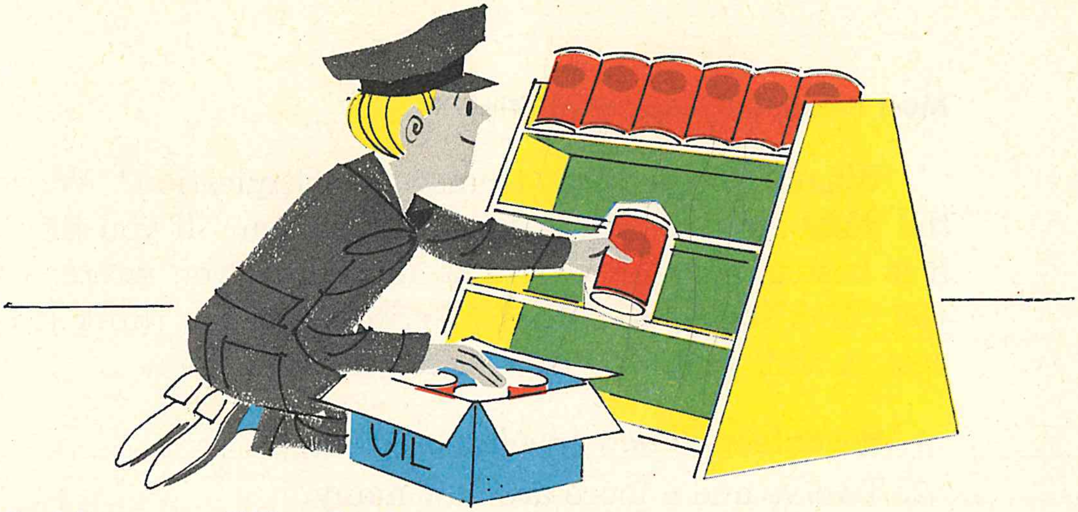


Pairs of Multiplication Facts

1. What is the easiest way to find how many birds are in the picture?
2. Some pupils thought "Three 4's are 12" was the easiest way to find how many birds. Others thought "Four 3's are 12" was easiest. Think of the birds in rows across the page. What fact do you see?
3. Think of the birds in rows up and down the page. What fact do you see?
4. Draw a dot picture. Show that 4 × 2 = 8.
5. Draw another dot picture. Show that 2 × 4 = 8.
6. Use a number line. Show that 2 × 7 and 7 × 2 are both equal to 14.
7. Copy the first fact. Then write another fact using the same numbers. The first one would be 2 × 3 = 6.

   3 × 2 = 6
   4 × 2 = 8
   5 × 2 = 10
   6 × 2 = 12

   4 × 3 = 12
   5 × 3 = 15
   6 × 3 = 18
   7 × 3 = 21
8. Show with a number line that your last pair of facts are equal.



Problems at a Filling Station

1. The picture shows a rack for cans of oil. How many cans will it take to fill all the shelves?
2. The man has four racks like this. How many shelves are there in all?
3. One morning the man sold 7 cans of oil. That afternoon he sold 11 cans of oil. How many cans did he sell that day?
4. One day there were only 10 oil cans on a rack. There were 24 spaces for oil cans. How many cans were needed to fill the rack?

▶ Write answers on folded paper.

5.	5 ×5	3 ×6	7 ×2	8 ×2	4 ×4	3 ×4	3 ×3
6.	12 −5	8 −2	6 −5	11 −5	17 −9	13 −8	14 −7
7.	6 +7	9 +7	3 +9	4 +5	8 +7	8 +3	7 +9

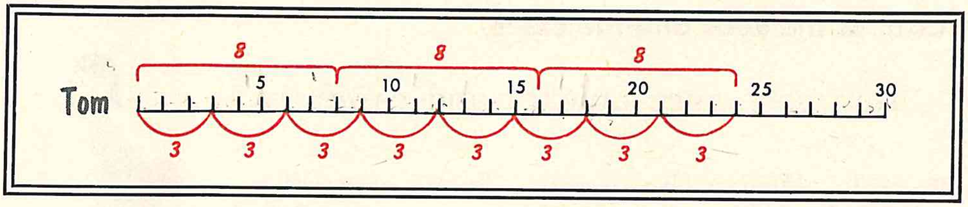
Must I Add, Subtract, or Multiply?

What is the best way to answer each question? Write the numbers 1–8. Read the first question. If you think it is best to multiply, write M after the 1 you wrote. If you think it best to subtract, write S. If you think it is best to add, write A. Do this for each question.

1. Seventeen is how much more than 12?
2. Twelve and 6 more are how many?
3. Eight and 21 are how much?
4. How many are six 5's?
5. How much are 17 and 8?
6. How much is 6 times 5?
7. A plant grew 4 inches in one day. In four days of growing that fast, how much would it grow?
8. From a rope that was 25 feet long, a piece 6 feet long was cut. How long was the rope then?

▶ Use folded paper. Multiply.

9.	5	2	3	6	4	9	1	4
	×5	×3	×8	×4	×2	×2	×4	×5
10.	2	4	5	4	6	7	4	5
	×2	×3	×6	×4	×3	×2	×8	×2
11.	5	4	3	3	2	2	5	2
	×1	×9	×7	×3	×5	×6	×9	×8
12.	2	3	1	6	3	5	2	3
	×4	×5	×6	×5	×4	×3	×7	×6



Mary
$$\begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array}$$
Four 6's = 24

Jack
$$\begin{array}{r} 5 \\ 5 \\ +5 \\ \hline 15 \end{array}$$

Jim
$$\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$$

Questions to Study

1. What two multiplication facts did Tom show on his number line?
2. Mary showed two ways of writing a multiplication fact. Can you think of another good way of writing the multiplication fact?
3. Ann wrote Jack's addition example as a multiplication fact. What did she write?
4. Does Jim's number question ask for seven 3's or three 7's?
5. What is the easiest way to find the number of bottles in the soda case?
6. Look at the case of soda bottles. What two multiplication facts can you see?
7. Finish the table for multiplying 3's.

Soda Case

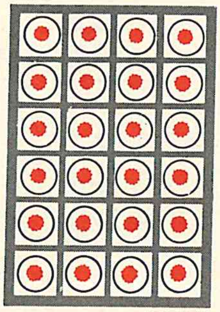


Table for Multiplying 3's

Two 3's = 6
Three 3's = 9
Four 3's = ?
Five 3's = ?
Six 3's = ?
Seven 3's = ?
Eight 3's = ?
Nine 3's = ?

Call for the Reds and the Blues

Run each race quickly and carefully.

Race 1. Write the sums. To be sure of a better paper, check by adding up.

1.	48	97	26	18	52	83
	+32	+61	+24	+31	+75	+64

2.	16	15	17	65	78	36
	23	41	13	84	41	28
	+14	+84	+40	+29	+52	+37

3.	135	524	795	628	375
	+241	+149	+203	+195	+283

4.	265	385	24	8	52
	24	5	142	219	6
	+123	+27	+7	+84	+738

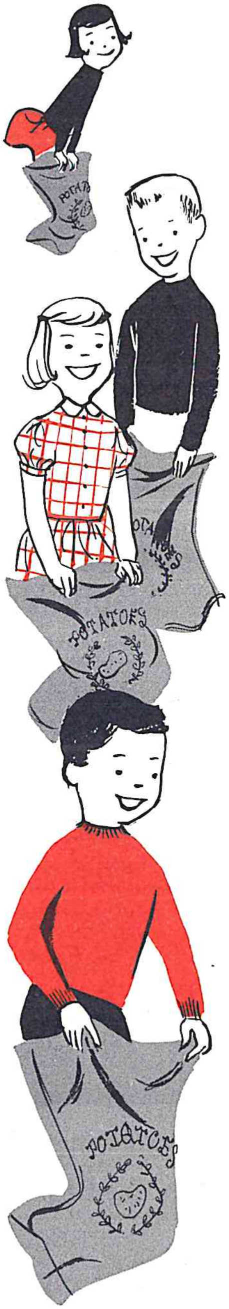
Race 2. Write the differences.

1.	28	74	55	20	75	94
	−13	−20	−19	−16	−37	−86

2.	536	473	418	385	962
	−521	−182	−259	−236	−365

3.	200	421	650	901	450
	−155	−300	−208	−891	−428

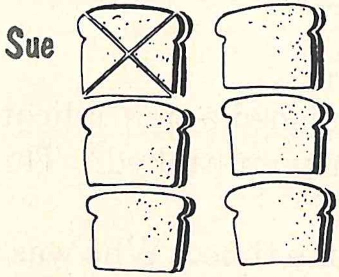
4.	524	315	637	492	800
	−9	−35	−100	−404	−6

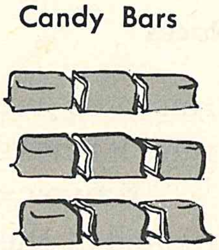


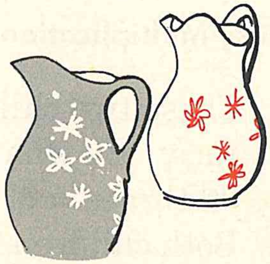
Number Questions Used in Solving Problems

Write the number question needed for each problem. Then answer the question.

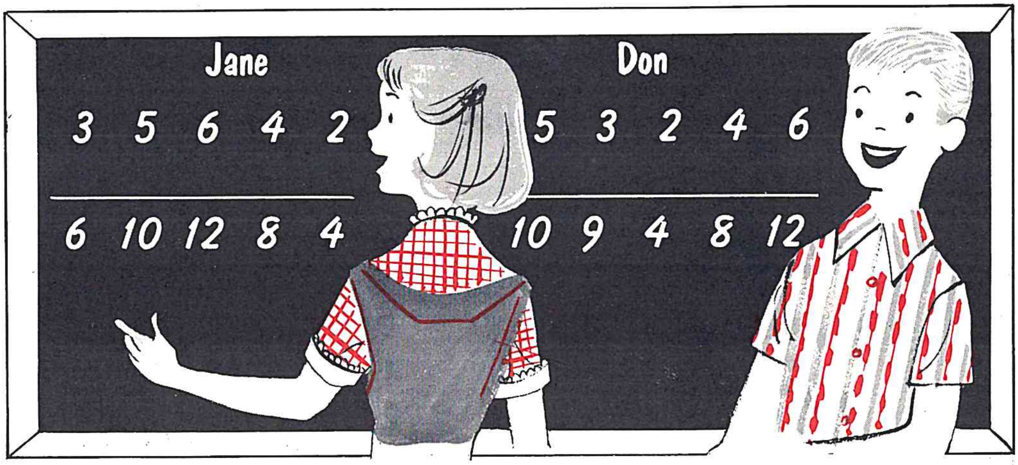
1. Sue will cut each sandwich into 4 small parts. How many small parts will there be after Sue cuts all the sandwiches?
2. Two slices of bread were used for each large sandwich. How many slices of bread were used?







3. How many pieces of candy are there in the three bars shown in the drawing?
4. Each milk pitcher will fill 8 glasses with milk. How many glasses can be filled from the pitchers shown in the drawing?
5. A large sandwich costs 15 cents. A candy bar costs 6 cents. How much would a large sandwich and a candy bar together cost?
6. Jerry has 35¢. He wants to buy a 49-cent airplane. How many more cents does he need?
7. Mother wants to give each boy 6 cakes. There are 5 boys. How many cakes must she have to do this?
8. There are 7 girls sitting in each row. How many girls are there in 4 rows?

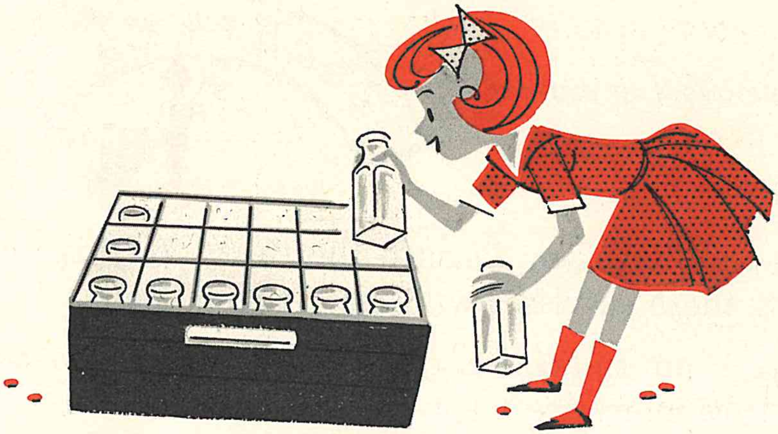


Easy Multiplication Races

1. These two children have just finished a multiplication race. By what number have they multiplied? Think, "? threes = 6? ? fives = 10?"
2. Both children finished at the same time. Who was the winner? How do you know?
3. Suppose you had Jane's numbers. If the teacher said to multiply by 5, what numbers would you write below the line?

Use the groups of red numbers below. Practice for multiplication races. Multiply red numbers in group 4 by 3. Then by 4. Multiply group 5 by 6. Then by 5. Multiply group 6 by 3. Then by 2. Multiply group 7 by 3. Then by 6.

4. 7 2 3 5 4
5. 2 4 6 3 5
6. 5 6 2 4 3
7. 3 6 2 5 4
8. Choose a partner. Try these races.



Using What You Have Learned

1. How many bottles will the box in the picture hold? Check your answer by finding it in at least one other way.
2. In answering problem 1, Don made a drawing of the box full of bottles. How many more bottles were in his box than in the one shown in the picture?
3. Some pupils found how many bottles the box would hold by adding. What two ways of adding could they have used?
4. Jerry brought 8 more bottles to put into the box. How many bottles in all were there?

▶ Use folded paper. Answer these questions.

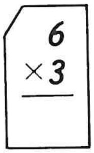
5. $\begin{array}{r}3\\ \times 8\\ \hline\end{array}$ $\begin{array}{r}4\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}6\\ \times 3\\ \hline\end{array}$ $\begin{array}{r}4\\ \times 5\\ \hline\end{array}$ $\begin{array}{r}8\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}9\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}3\\ \times 7\\ \hline\end{array}$

6. $\begin{array}{r}7\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}3\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}4\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}2\\ \times 9\\ \hline\end{array}$ $\begin{array}{r}3\\ \times 5\\ \hline\end{array}$ $\begin{array}{r}2\\ \times 8\\ \hline\end{array}$ $\begin{array}{r}3\\ \times 6\\ \hline\end{array}$

How Well Have You Learned?

How well have you learned the things in this unit? Doing these exercises will help you find out.

1. Write a multiplication question that could be used for "How many are 4 + 4 + 4 + 4?" (205)
2. Show by drawing and counting that five 3's are 15. (206)
3. Write a multiplication fact in three ways. (207)
4. What are three ways to find the answer to the question, "How many are six 2's?" (209)
5. How many marks are used to show the number 204 on a place-value chart? (214)
6. Use the number line. Find the answer to "How many are three 6's?" (209)
7. Write four ways that help you learn the multiplication facts. (210)
8. Write the fact that belongs on the other side of this multiplication helper card. (213)



9. Use the numbers 2, 3, and 6. Write a pair of multiplication facts. (216)
10. Write the multiplication fact that tells the same thing as 4 + 4 + 4 + 4 + 4 = 20. (219)
11. Copy the odd numbers from this list: (23)
17, 22, 23, 36, 39.

Helping Yourself

Answer these questions. It will help you remember some important things you studied in Unit Eight.

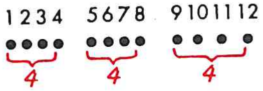
1. You can get the answer to "How many are three 5's?" by adding. Why is it better to find this answer by multiplying? (205)
2. Can the answer to a multiplication question be found by counting? Show that your answer is correct. Use the question, "Seven 2's are how many?" (209)
3. Can a number line be used to find the answer to a multiplication question? Show that your answer is correct. Use the question, "How many are two 5's?" (206, 209)
4. How many markers would you need to show the number 225 on the abacus? (27, 214)
5. A peg board shows the number 62. How many pegs are in the board? (26, 214)
6. What is the best way of showing that three 4's equal four 3's? (219)
7. What is the best way to show that your answer to a multiplication question is correct? Show what you mean. Use the number question, "How many are three 6's?" (219)

How Well Are You Doing?

Use folded paper. Write the answers.

1.	4	6	3	4	3	5	8
	×3	×2	×7	×8	×3	×2	×3
2.	2	4	5	6	4	3	2
	×8	×5	×8	×4	×6	×5	×9
3.	4	5	2	5	2	5	2
	×4	×9	×4	×6	×3	×7	×5
4.	5	4	2	3	3	2	4
	×3	×2	×6	×8	×4	×7	×8
5.	3	4	3	5	4	3	5
	×2	×7	×9	×4	×9	×6	×5

6. Use a number line. Show that your answer to the last question in each row is correct.
7. Use a dot drawing and counting. Show that your answer to the first question in each row is correct. The first one is done for you here.

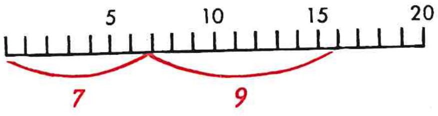


8. Name the odd numbers between 95 and 100.
9. What number is shown on the place-value chart?

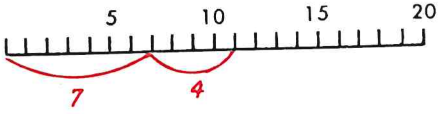
thousands	hundreds	tens	ones
4 ////	6 //////	4 ////	2 //

10. What number facts are shown on number line A?
11. What number facts are shown on number line B?

A



B



UNIT NINE

Learning More About Multiplication

ADD	MULTIPLY
3¢	3¢
3¢	×5
3¢	15¢
3¢	
+3¢	
15¢	

1. Sue bought five 3-cent stamps. How much will the stamps cost?

Sue can write 3¢, the amount, five times in a column and add.

Or she can think, "Five times 3¢ equals 15¢."

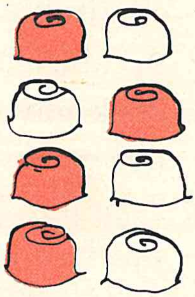
She can write it like this: 5×3¢=15¢ or

3¢
×5
15¢

■ **The sign × means times or multiplied by. When you multiply, the answer is called the product.**

2. Jerry gave 2 pieces of candy to each of 4 children. How many pieces did he give in all?

How many pieces of candy are there in one group? How many equal groups are there?



■ **A multiplication problem tells you how many there are in one group or amount. It tells you how many equal groups or amounts there are. It asks you to find how many there are in all of these equal groups or amounts.**

Multiplying Groups of Two

You have helper cards for all these facts, except the fact written in red. Make a helper card for this fact. Be sure you know all these facts well.

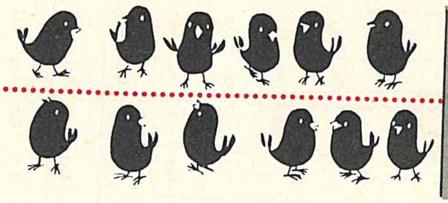
Multiplication Facts for 2's

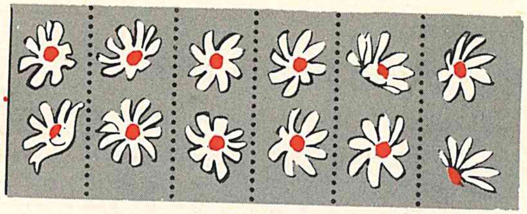
2	2	2	2	2	2	2	2	2
×1	×2	×3	×4	×5	×6	×7	×8	×9
2	4	6	8	10	12	14	16	18

No Pencils, Please!

Read the problem. Then read the multiplication fact above that solves the problem.

1. Joe learns 2 spelling words a day. How many words will he learn in 7 days? In 8 days?
2. Mary put 2 sheets of paper on each desk. How many sheets did she put on 9 desks? On 3 desks?
3. There are 2 children sitting in each seat. How many children are sitting in 6 seats? In 8 seats?
4. A candy bar costs 2¢. What will 5 bars cost?
5. Jack gave 2 pieces of candy to each boy. How many pieces will he give to 4 boys? To 5 boys?
6. Tom put 2¢ in each pocket. How many pennies did he put in 4 pockets?
7. Jerry paid 2¢ for each big marble. How much did 9 big marbles cost? Six big marbles?
8. Each boy sharpened 2 pencils. How many pencils did 3 boys sharpen?





Using Two in Multiplication

1. Which of the pictures above shows six equal groups? How many things are there in each equal group? The number question for this picture may be written in three ways:

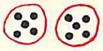
Six 2's are how many? $6 \times 2 = \boxed{?}$ $$\begin{array}{r} 2 \\ \times 6 \\ \hline \boxed{?} \end{array}$$

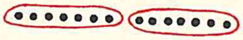
2. Which picture shows two equal groups? How many things are there in each equal group? The number question for this picture may be written:

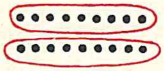
Two 6's are how many? $2 \times 6 = \boxed{?}$ $$\begin{array}{r} 6 \\ \times 2 \\ \hline \boxed{?} \end{array}$$

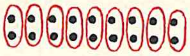
3. Tell which dot picture shows each of these number questions:

$$\begin{array}{r} 5 \\ \times 2 \\ \hline \boxed{?} \end{array} \qquad \begin{array}{r} 7 \\ \times 2 \\ \hline \boxed{?} \end{array} \qquad \begin{array}{r} 2 \\ \times 9 \\ \hline \boxed{?} \end{array} \qquad \begin{array}{r} 9 \\ \times 2 \\ \hline \boxed{?} \end{array}$$

Mary 

Joe 

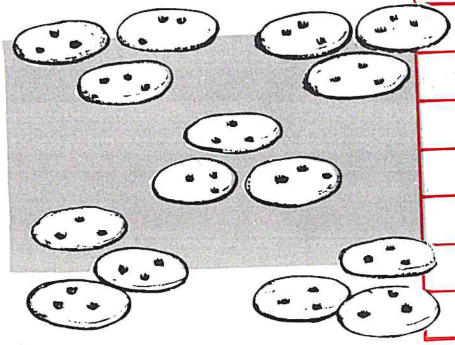
Ann 

Sue 

Study these facts for multiplying by 2. You need helper cards for the facts printed in red.

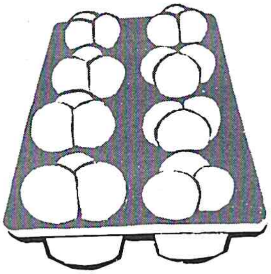
$$\begin{array}{r} 1 \\ \times 2 \\ \hline 2 \end{array} \quad \begin{array}{r} 2 \\ \times 2 \\ \hline 4 \end{array} \quad \begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array} \quad \begin{array}{r} 4 \\ \times 2 \\ \hline 8 \end{array} \quad \begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array} \quad \begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array} \quad \begin{array}{r} 7 \\ \times 2 \\ \hline 14 \end{array} \quad \begin{array}{r} 8 \\ \times 2 \\ \hline 16 \end{array} \quad \begin{array}{r} 9 \\ \times 2 \\ \hline 18 \end{array}$$

Table for Multiplying Groups of 3



	3	3	3	3	3	3	3	3	3
1 × 3 = 3		3	3	3	3	3	3	3	3
2 × 3 = 6			3	3	3	3	3	3	3
3 × 3 = 9				3	3	3	3	3	3
4 × 3 = 12					3	3	3	3	3
5 × 3 = 15						3	3	3	3
6 × 3 = 18							3	3	3
7 × 3 = 21								3	3
8 × 3 = 24									3
9 × 3 = 27									

Study the table above carefully. If you cannot solve a problem, the table can help you.



1. Betty puts 3 raisins on each cooky. How many raisins will she need for 5 cookies? For 9 cookies?
2. Betty makes "clover-leaf" rolls. Why do you think she calls them that?
3. There are 3 little parts for each roll. How many little parts must she make for 2 rolls? 3 rolls? 8 rolls? 6 rolls?
4. Betty is going to make sandwiches for 9 children. If each child is to have 3 sandwiches, how many sandwiches must she make?
5. Count by 3's to 27.
6. Use addition. Show what five 3's equal.
7. Use a dot picture and counting. (See page 209.) Show what eight 3's equal.

Using Three in Multiplication

This table helps you to see the multiplication facts for 3's together in a table. Make a helper card for the fact in red. You have helper cards for the other facts. Study this table.

Multiplication Facts for 3's

3	3	3	3	3	3	3	3	3
×1	×2	×3	×4	×5	×6	×7	×8	×9
3	6	9	12	15	18	21	24	27

Study this table. It may help you to remember the facts for multiplying by 3 better. Make a helper card for the fact in red.

1	2	3	4	5	6	7	8	9
×3	×3	×3	×3	×3	×3	×3	×3	×3
3	6	9	12	15	18	21	24	27

▶ Write products quickly on folded paper.

1.	7	3	8	2	6	8	2	1
	×3	×9	×2	×3	×2	×3	×5	×3
2.	3	4	2	4	3	3	2	3
	×1	×3	×1	×2	×3	×7	×6	×4
3.	2	5	9	3	1	5	2	6
	×3	×2	×3	×6	×2	×3	×7	×3
4.	9	3	3	7	2	3	3	2
	×2	×5	×2	×2	×9	×8	×2	×8

Multiplying Tens

1. Some children are counting tickets that are used in the school lunchroom. They put 10 tickets in a bundle. How many tickets are there in 4 bundles?

$$\text{Linda}\quad \begin{array}{r} \text{tens ones} \\ 10 \\ 10 \\ 10 \\ +\,10 \\ \hline 40 \end{array} \qquad \text{Dan}\quad \begin{array}{r} 10 \\ \times 4 \\ \hline \end{array} \ \text{or}\ \begin{array}{r} 1 \text{ ten} \\ \times 4 \phantom{\text{ ten}} \\ \hline 4 \text{ tens} \end{array} \qquad \text{Mary}\quad \begin{array}{r} \text{tens ones} \\ 10 \\ \times 4 \\ \hline 40 \end{array}$$

2. Explain Linda's way of finding the answer.
3. Which child found the answer the shortest way?
4. Draw groups of dots. Show that Dan's answer, or product, is correct.
5. Look at Mary's multiplication. She multiplied ones first. She thought, "The zero in ones place shows there are no ones to multiply. Four times no ones, or 0, equals 0." Mary was right. Linda's addition shows you that 0 + 0 + 0 + 0 = 0, or that 4 × 0 = 0.
6. What did Mary think when she multiplied the tens in her number? Thinking "4 × 1 = 4" is another way to think "1 + 1 + 1 + 1 = 4" as Linda did in her addition.

7. Joe is helping to put tickets in bundles, too. He is putting 10 tickets in a bundle. How many tickets will there be in 3 bundles? In 7 bundles? In 9 bundles? In 8 bundles? Finish the examples that Joe began.

$$\text{Joe}\quad \begin{array}{r} 10 \\ \times 3 \\ \hline 30 \end{array} \qquad \begin{array}{r} 10 \\ \times 7 \\ \hline 0 \end{array} \qquad \begin{array}{r} 10 \\ \times 9 \\ \hline \end{array} \qquad \begin{array}{r} 10 \\ \times 8 \\ \hline \end{array}$$

8. Which of the following zero facts did Joe use in his multiplication examples? Read the fact. Then read the example in which Joe used the fact.

$$\begin{array}{r} 0 \\ \times 1 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 2 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 3 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 4 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 5 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 6 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 7 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 8 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \times 9 \\ \hline 0 \end{array}$$

9. Tom is putting stamps in a book. There are 30 stamps on a page. How many stamps will he need to fill 5 pages? Explain Jack's work. Explain Sue's multiplication.

$$\text{Jack}\quad \begin{array}{r} 30 \\ \times 5 \\ \hline \end{array} \qquad \text{or} \qquad \begin{array}{r} 3 \text{ tens} \\ \times 5 \phantom{\text{ tens}} \\ \hline 15 \text{ tens} \end{array}$$

$$15 \text{ tens} \begin{array}{l} \rightarrow 10 \text{ tens} = 100 \\ \searrow 5 \text{ tens} = + 50 \\ \hline 15 \text{ tens} 150 \end{array}$$

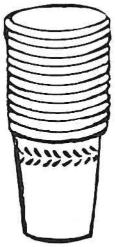
The answer or product is 150.

$$\begin{array}{rccc} & \text{hundreds} & \text{tens} & \text{ones} \\ & \downarrow & \downarrow & \downarrow \\ \text{Sue} & & 3 & 0 \\ & & \times & 5 \\ \hline & 1 & 5 & 0 \end{array}$$

10. Multiply. Write the answers, or products, on folded paper.

$$\begin{array}{r} 30 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 60 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ \times 6 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 30 \\ \times 9 \\ \hline \end{array} \quad \begin{array}{r} 90 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 30 \\ \times 8 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ \times 9 \\ \hline \end{array}$$

Multiplying Tens and Ones



1. There are 12 paper cups in one package. How many are there in 4 packages?

How did Tom get his answer? Explain Sue's multiplication.

Tom

$$\begin{array}{r} 12\\ 12\\ 12\\ +12\\ \hline 48 \end{array}$$

Sue

$$\begin{array}{cc} \text{tens} & \text{ones}\\ 1 & 2\\ \times & 4\\ \hline 4 & 8 \end{array}$$

Copy. Multiply. Check by using addition.

2.	21 ×4	11 ×2	24 ×2	22 ×3	23 ×2	44 ×2	13 ×3
3.	12 ×3	33 ×2	11 ×4	31 ×2	12 ×2	14 ×2	11 ×3
4.	32 ×3	31 ×3	22 ×2	34 ×2	21 ×3	42 ×2	22 ×4
5.	41 ×2	21 ×2	43 ×2	23 ×3	33 ×3	32 ×2	12 ×4

6. Ann paid 12¢ ($.12) a bar for soap. What did she pay for 4 bars?

How does Jim's multiplication differ from Ann's? In what way are their multiplications alike? Whose way seems easier? Either way is correct.

Ann

$$\begin{array}{r} 12¢\\ \times 4\\ \hline 48¢ \end{array}$$

Jim

$$\begin{array}{r} \$\,.12\\ \times 4\\ \hline \$\,.48 \end{array}$$

Copy. Multiply. Remember to write the cents sign, or the dollar sign and the cents point, where needed.

7.	34¢ ×2	22¢ ×4	23¢ ×3	33¢ ×3	$.12 ×4	$.32 ×3	$.11 ×9	$.31 ×2

8. Ann put 64 lights on her Christmas tree. Jim put 2 times as many lights on his tree. How many lights were there on Jim's tree?

Ann found the answer by adding.

Another way to find the answer is to multiply 64 by 2. Jim multiplied the ones first: 2 × 4 ones = 8 ones. He wrote 8 in ones place. Then he multiplied the tens: 2 × 6 tens = 12 tens. Jim thought, "12 tens equal 10 tens and 2 tens." He wrote 2 in tens place. Then he thought, "10 tens equal 100." He wrote 1 in hundreds place. His product was 128.

ADD

$$\text{Ann}\quad \begin{array}{r} 64 \\ +64 \\ \hline 128 \end{array}$$

or

MULTIPLY

$$\text{Jim}\quad \begin{array}{rr} \text{tens} & \text{ones} \\ 6 & 4 \\ \times & 2 \\ \hline 12 & 8 \end{array}$$

Copy. Multiply. In the product be sure to write ones in ones place, tens in tens place, and hundreds in hundreds place.

9.	54	32	43	61	84	32	21	83	31
	×2	×4	×3	×3	×2	×3	×8	×2	×7

Copy. Multiply. Check your answers by adding.

10.	74	31	64	73	31	63	82	72
	×2	×5	×2	×3	×9	×2	×3	×2
11.	53	42	52	92	63	21	94	21
	×3	×3	×3	×3	×3	×7	×2	×7
12.	71	62	83	52	73	92	72	93
	×2	×3	×3	×2	×2	×2	×3	×2

Hundreds in Multiplication

1. In a "Clean-up" parade the girls of Adams School marched in groups. There were 132 girls in each group. How many girls were there in 3 groups?

   Pam multiplied 132 by 3. She said, "To multiply, begin with ones: 3 × 2 ones = 6 ones. Write 6 in ones place.

   "Next multiply tens: 3 × 3 tens = 9 tens. Write 9 in tens place.

   "Then multiply hundreds: 3 × 1 hundred = 3 hundreds. Write 3 in hundreds place. The product is 396."

	hundreds	tens	ones
Pam	1	3	2
		×	3
	3	9	6

CHECK

$$\begin{array}{r} 132 \\ 132 \\ +132 \\ \hline 396 \end{array}$$

2. Explain how Jerry multiplied. Why is Pam's way better?

Jerry

$$\begin{array}{r} 132 \\ \times 3 \\ \hline \end{array}$$

3×2 ones = 6

3×3 tens = 90

3×1 hundred = 300

396

3. In the first two groups each girl carried a flag. There were 132 girls in a group. How many flags were needed?

Copy. Multiply as Pam did. Check by adding.

4.	221 ×3	210 ×4	331 ×3	244 ×2	323 ×3	213 ×2	301 ×3
5.	243 ×2	212 ×4	200 ×4	242 ×2	101 ×5	241 ×2	223 ×3
6.	424 ×2	321 ×3	444 ×2	221 ×4	334 ×2	311 ×3	120 ×4

Carrying from Ones to Tens in Multiplication

1. What is the cost of 2 dozen oranges at 48¢ a dozen?

To find the cost, Sue multiplied 48¢ by 2. She thought, "2 × 8 ones equals 16 ones," and she wrote 16.

Then she thought, "2 × 4 tens equals 8 tens." She added 8 tens or 80 to the 16. Her answer was 96¢.

Sue

$$\begin{array}{rl} \text{tens ones} & \\ 48\text{¢} & \\ \times 2 & \\ \hline 16 & (2 \times 8) \\ 80 & (2 \times 40) \\ \hline 96\text{¢} & \end{array}$$

Tom showed Sue a shorter way. He said: "2 × 8 ones = 16 ones, or 1 ten and 6 ones. Write 6 in ones place. Remember you have 1 ten to carry."

Then he said, "2 × 4 tens = 8 tens. 8 tens and 1 ten to be carried = 9 tens." He wrote 9 in tens place. The product was 96¢.

Tom

$$\begin{array}{rcr} \text{tens ones} & & \text{CHECK} \\ 48\text{¢} & & 48\text{¢} \\ \times 2 & & +48\text{¢} \\ \hline 96\text{¢} & & 96\text{¢} \end{array}$$

Copy. Multiply the way Tom showed Sue.

2. $\begin{array}{r}46\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}29\\ \times 3\\ \hline\end{array}$ $\begin{array}{r}23\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}12\\ \times 6\\ \hline\end{array}$ $\begin{array}{r}47\\ \times 2\\ \hline\end{array}$ $\begin{array}{r}13\\ \times 5\\ \hline\end{array}$ $\begin{array}{r}25\\ \times 3\\ \hline\end{array}$ $\begin{array}{r}24\\ \times 4\\ \hline\end{array}$

3. If there are 96 apples in 1 box, how many apples are there in 3 boxes?

Bill multiplied 96 by 3. When he thought, "3 × 6 ones = 18 ones," what number did he write in the product? What number did he carry? When he thought, "3 × 9 tens = 27 tens and 1 ten (carried) = 28 tens," why did he write 2 in hundreds place and 8 in tens place?

Bill

$$\begin{array}{rcr} \text{hundreds} & & \\ \text{tens} & & \text{CHECK} \\ \text{ones} & & 96 \\ 96 & & 96 \\ \times 3 & & +96 \\ \hline 288 & & 288 \end{array}$$

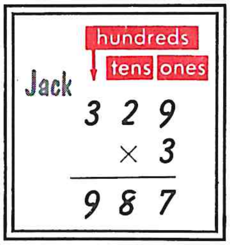
Carrying in Multiplication

Copy. Multiply. Check by going over your work.

1.	56	33	59	48	23	32	57	22
	×2	×4	×2	×3	×5	×9	×3	×7
2.	67	86	24	13	32	89	97	59
	×2	×3	×3	×8	×7	×2	×3	×3
3.	23	78	32	58	49	33	39	76
	×9	×2	×7	×2	×3	×8	×3	×3

4. Jack took a trip on a plane. The plane traveled 329 miles an hour. How many miles did it go in 3 hours?

Jack wrote 7 in ones place. How did he get this 7? How many tens did he have to carry? When he thought, "3 × 2 tens and 2 tens," where did he write 8? Why? The 9 in Jack's product is written in hundreds place. How did he get this 9?



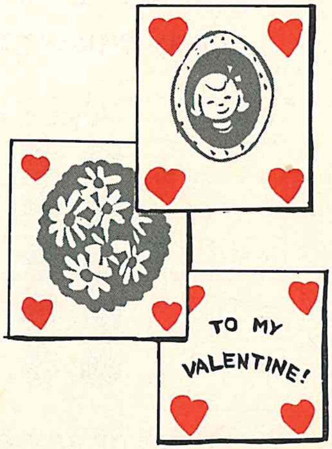
Copy. Multiply. Check by adding.

5.	217	418	112	125	225	319	213
	×3	×2	×6	×3	×2	×3	×4
					450	957	852
6.	123	216	429	112	223	427	113
	×4	×3	×2	×5	×4	×2	×7
7.	215	113	339	223	446	239	326
	×3	×5	×2	×4	×2	×2	×3
8.	103	406	102	209	203	305	207
	×6	×2	×8	×2	×4	×2	×3

Using a Table for Groups of 4

1. Helen is putting a heart in each corner of her valentines. How many corners are there? How many hearts will she need to make 3 valentines? To make 5? To make 6? This table can help you find answers.

	4	4	4	4	4	4	4	4	4
	1 × 4 = 4	4	4	4	4	4	4	4	4
		2 × 4 = 8	4	4	4	4	4	4	4
			3 × 4 = 12	4	4	4	4	4	4
				4 × 4 = 16	4	4	4	4	4
					5 × 4 = 20	4	4	4	4
						6 × 4 = 24	4	4	4
							7 × 4 = 28	4	4
								8 × 4 = 32	4
									9 × 4 = 36


TO MY VALENTINE!

2. Five children made valentines. Each child made 4 valentines. How many did they make in all?
3. Billy bought 24 valentines. Jack bought 7 times as many as Billy. How many valentines did Jack buy?
4. Find the cost of 25 valentines at 4 cents each.

Make a helper card for the fact in red. Make a stack of your helper cards for the facts below. Work with a partner. See how fast you can give the products.

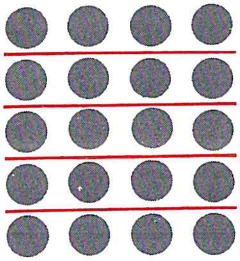
Multiplication Facts for 4's

4	4	4	4	4	4	4	4	4
×1	×2	×3	×4	×5	×6	×7	×8	×9
4	8	12	16	20	24	28	32	36

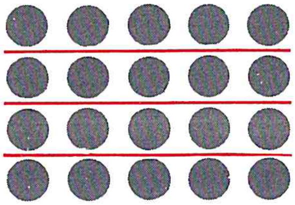
Using Four in Multiplication

1. Alice placed 20 pennies in 5 equal rows. How many equal groups did she make? How many pennies did she put in each equal group? 5 × ⍰ = 20.
2. Tom placed 20 pennies in 4 equal rows. How many pennies are there in one of the equal groups? How many equal groups are there? ⍰ × 5 = 20?

Alice's Pennies



Tom's Pennies



3. Write or say each product below.

5 × 4, and 4 × 5 — 3 × 4, and 4 × 3
7 × 4, and 4 × 7 — 6 × 4, and 4 × 6
9 × 4, and 4 × 9 — 8 × 4, and 4 × 8

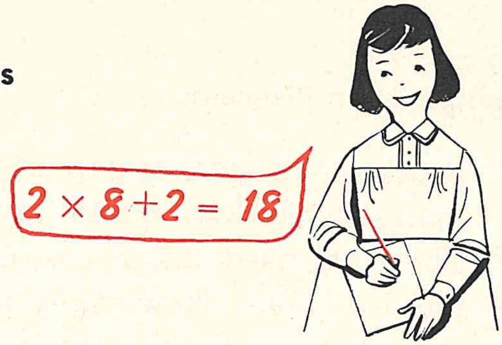
This table shows the facts in which 4 is the multiplier. Make helper cards for the facts in red. The facts in black you have been using for some time.

$\begin{array}{r}1\\ \times 4\\ \hline 4\end{array}$ $\begin{array}{r}2\\ \times 4\\ \hline 8\end{array}$ $\begin{array}{r}3\\ \times 4\\ \hline 12\end{array}$ $\begin{array}{r}4\\ \times 4\\ \hline 16\end{array}$ $\begin{array}{r}5\\ \times 4\\ \hline 20\end{array}$ $\begin{array}{r}6\\ \times 4\\ \hline 24\end{array}$ $\begin{array}{r}7\\ \times 4\\ \hline 28\end{array}$ $\begin{array}{r}8\\ \times 4\\ \hline 32\end{array}$ $\begin{array}{r}9\\ \times 4\\ \hline 36\end{array}$

4. Copy and multiply.

$\begin{array}{r}34\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}25\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}56\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}74\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}59\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}48\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}37\\ \times 4\\ \hline\end{array}$ $\begin{array}{r}89\\ \times 4\\ \hline\end{array}$

Practicing "Times-and" Facts



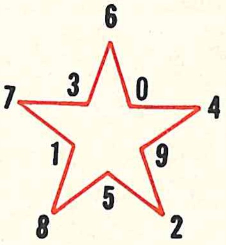
When you carry in multiplication, you have to add a number to a product. To multiply 96 by 4, you think, "4 times 6 = 24." You write 4 in your answer and carry 2. Then you think, "4 times 9 and 2 = 38." You write 38 where it belongs in the product. The product is 384.

$$\boxed{\begin{array}{r} 96 \\ \times 4 \\ \hline 384 \end{array}}$$

Facts like 4 times 9 and 2 = 38 can be called "times-and" facts. Practicing "times-and" facts will help you to multiply faster and better.

Make these into "times-and" facts. That is, read with the answer.

1. 4 × 8 + 2 = ?   3 × 6 + 1 = ?   5 × 4 + 3 = ?
2. 3 × 7 + 2 = ?   7 × 4 + 2 = ?   3 × 8 + 2 = ?
3. 9 × 3 + 2 = ?   6 × 4 + 3 = ?   3 × 5 + 2 = ?
4. 4 × 4 + 3 = ?   4 × 9 + 2 = ?   3 × 4 + 2 = ?
5. Multiply the numbers around the star by 4 and add 1.
6. Multiply the numbers around the star by 4 and add 2.
7. Multiply the numbers around the star by 4 and add 3.



Multiplication Problems

1. It takes 65 sheets of paper to make a notebook. How many sheets will it take to make 4 notebooks?
2. The class used 139 pieces of paper to make a science picture book. How many pieces will the class need to make 3 books like this?
3. Joe delivered 123 newspapers a day. How many did he deliver if he worked 4 days?
4. Mr. Smith makes a business trip of 214 miles each week. How many miles does he travel if he makes these trips for 5 weeks?

Multiply. Check by going over your work.

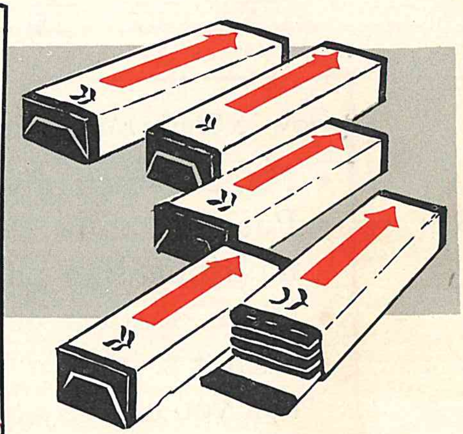
5.	26 ×4	15 ×3	34 ×5	48 ×4	103 ×5	328 ×3	226 ×2
6.	57 ×4	39 ×3	28 ×4	24 ×5	216 ×4	437 ×2	302 ×3
7.	68 ×4	93 ×4	43 ×9	78 ×2	325 ×3	218 ×4	327 ×3
8.	96 ×4	23 ×8	46 ×4	34 ×5	204 ×4	129 ×3	428 ×2
9.	84 ×3	56 ×4	43 ×5	69 ×4	112 ×5	214 ×4	415 ×2
10.	58 ×4	36 ×4	47 ×3	95 ×2	123 ×4	118 ×4	325 ×2

Multiplying Groups of 5

1. There are 5 sticks of gum in a package. How many sticks are there in 6 packages?
2. There are 5 players on a basketball team. How many persons are playing when 2 teams play together?
3. There are 45 cookies in a package. How many cookies are there in 4 packages? In 5 packages?
4. If there are 35 pieces of candy in each bag, how many pieces will there be in 9 bags? In 8?

Look at this table for multiplying 5's.

5	5	5	5	5	5	5	5	5
1 × 5 = 5	5	5	5	5	5	5	5	5
	2 × 5 = 10	5	5	5	5	5	5	5
		3 × 5 = 15	5	5	5	5	5	5
			4 × 5 = 20	5	5	5	5	5
				5 × 5 = 25	5	5	5	5
					6 × 5 = 30	5	5	5
						7 × 5 = 35	5	5
							8 × 5 = 40	5
								9 × 5 = 45



5. The table above shows that 9 groups of 5 added together equal 45, or ☐ × 5 = 45.
6. Four groups of 5, or 4 × 5 = ☐
7. In a parade 65 children marched in each line. How many children paraded if there were 5 lines?
8. Going to a school picnic, 55 children rode in each bus. How many children rode to the picnic in 7 buses?

Using Five in Multiplication

Study these facts until you know them well. Make helper cards for the facts in red.

Multiplication Facts for 5's

5	5	5	5	5	5	5	5	5
×1	×2	×3	×4	×5	×6	×7	×8	×9
5	10	15	20	25	30	35	40	45

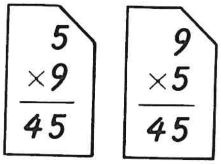
Facts for Multiplying by 5

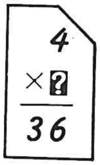
1	2	3	4	5	6	7	8	9
×5	×5	×5	×5	×5	×5	×5	×5	×5
5	10	15	20	25	30	35	40	45

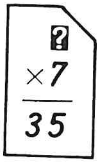
How to Study Multiplication Facts

- Make a stack of your helper cards.
- Put as many cards as you can in multiplication pairs. Study the pairs.
- Make a stack of all the helper cards with 5's. Have some friend see how fast you can say the facts. Do the same for 4's. For 3's. For 2's.
- Put all these helper cards together. Play like this with some other children. Say, "I am looking at a multiplication fact. The product is 36. One of the numbers is 4. What is the other number in this fact?" Use different products.

Pairs







Carrying to Hundreds Place in Multiplication

1. Uncle Fred drove 263 miles in one day. At this rate, how far will he drive in 3 days?

   Here is what John thought as he multiplied: "3 × 3 ones = 9 ones. Write 9 in ones place. 3 × 6 tens = 18 tens, or, 1 hundred and 8 tens. Write 8 in tens place. 3 × 2 hundreds = 6 hundreds and 1 hundred (carried) = 7 hundreds. Write 7 in hundreds place. The product is 789 miles."

   John $\begin{array}{r} 263 \\ \times 3 \\ \hline 789 \end{array}$

2. Mr. Brown drove 283 miles on 1 tank full of gas. At this rate, how far can he drive if he fills the tank 2 times?

3. Ann counted 150 pictures in her magic color book. How many pictures will there be in 5 books like this?

Copy. Multiply.

4.	242 ×4	384 ×2	231 ×4	150 ×6	192 ×4	493 ×2
5.	292 ×3	162 ×4	474 ×2	171 ×5	182 ×4	141 ×7

Copy. Multiply. In some of these you carry to tens place. In others you carry to hundreds place.

6.	329 ×3	284 ×2	172 ×4	462 ×2	273 ×3	191 ×5
7.	216 ×4	117 ×5	214 ×4	263 ×3	384 ×2	129 ×3

Carrying Twice in Multiplication

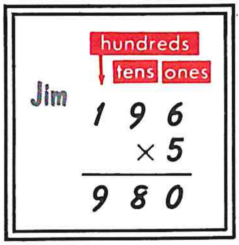
1. Jim's father has 196 chickens. Last year he had 5 times as many. How many did he have last year?

Here is how Jim explained his multiplication:

"5 × 6 ones = 30 ones, or 3 tens and 0 ones. Write 0 in ones place. Carry 3 tens.

"5 × 9 tens = 45 tens. 45 tens and 3 tens (carried) are 48 tens, or 4 hundreds and 8 tens. Write 8 in tens place. Carry 4 hundreds.

"5 × 1 hundred = 5 hundreds. 5 hundreds and 4 hundreds (carried) = 9 hundreds. Write 9 in hundreds place. The product is 980."



2. Jim's father gathered 165 eggs daily for 3 days. How many eggs did he get in the 3 days?

Copy. Multiply. Check by multiplying again.

3.	178 ×4	297 ×3	468 ×2	197 ×5	236 ×4	247 ×4
4.	277 ×3	498 ×2	184 ×5	238 ×4	159 ×5	275 ×3
5.	259 ×2	375 ×2	284 ×3	179 ×4	238 ×4	135 ×5
6.	234 ×4	487 ×2	169 ×5	389 ×2	177 ×5	253 ×4
7.	396 ×2	288 ×3	254 ×3	196 ×5	495 ×2	239 ×4

Multiplying Amounts of Money

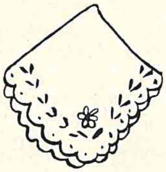
1. What is the cost of 4 neckties at 98 cents each? Study the ways these children worked this problem.

Mary	98¢ ×4 392¢ = $3 and 92¢, or $3.92	**Don**	$0.98 ×4 $3.92

Why is Mary's way longer than Don's? How did Don write 98 cents? Who used the better way?

■ **In multiplying money, the cents sign may be used if no amount in the multiplication is one dollar, or more. Use the dollar sign and the cents point in any multiplication in which there is an amount of one dollar, or more.**

2. One pound of candy costs 79 cents. What will a 5-lb. box cost at this price?



3. One handkerchief costs 35 cents. How much will Jane pay for 6 of these handkerchiefs?

4. How much will 8 cans of dog food cost at 24¢ a can?
5. What will you pay for 8 boxes of breakfast food at 23¢ a box?

Multiply. Remember to write the dollar signs and cents points.

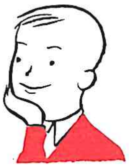
6.	$0.56	$0.45	$0.69	$0.38	$0.25	$0.47
	×5	×8	×4	×3	×7	×3

Multiplying Dollars and Cents

1. Mr. King bought 5 bushels of apples at $1.67 a bushel. What did he pay for the 5 bushels?

Jerry and Tom worked this problem. After Jerry multiplied, his answer did not tell him how much the apples cost. Why?

Jerry
```
 167
  ×5
 835
```



Tom
```
 $1.67
    ×5
 $8.35
```

How did Tom write the number to be multiplied? His answer is eight dollars and thirty-five cents. How did he show that there were dollars and cents in his answer?

Are Tom's work and Jerry's work alike in any way?

Copy. Multiply. Remember the dollar sign and cents point. Check by going over your work.

2.	$2.82 ×3	$1.45 ×3	$2.32 ×5	$4.03 ×2	$2.25 ×4
3.	$1.28 ×3	$2.67 ×3	$1.95 ×4	$1.12 ×7	$2.20 ×4
4.	$1.12 ×9	$4.26 ×2	$3.59 ×3	$4.21 ×2	$1.55 ×5
5.	$0.23 ×8	$0.12 ×9	$0.35 ×5	$0.59 ×3	$0.98 ×4

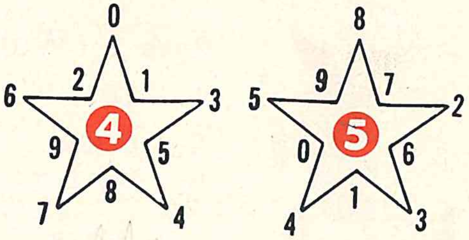
Good Multiplication Practice

Say the answers to these "times-and" facts quickly.

1. 5 × 4 + 2 5 × 7 + 1 5 × 3 + 4 5 × 9 + 3
2. 5 × 5 + 2 5 × 8 + 4 5 × 6 + 4 5 × 1 + 3
3. 5 × 0 + 4 5 × 1 + 1 5 × 5 + 3 5 × 9 + 2
4. 9 × 5 + 4 6 × 5 + 2 7 × 5 + 3 4 × 5 + 4
5. 4 × 4 + 4 3 × 6 + 2 3 × 4 + 3 3 × 5 + 4
6. 7 × 4 + 3 6 × 2 + 4 9 × 3 + 4 7 × 3 + 3

Copy the stars on the board. Work with a partner or a team. Multiply and add in this way:

7. Multiply each number around the star by the number in the star. Add 1 to your product.
8. Multiply again. Add 2 to your product.
9. Multiply again. Add 3 to your product.
10. Multiply again. Add 4 to your product.



adding

Write products. Check by going over your work.

11.	123 ×5	374 ×2	130 ×7	143 ×6	250 ×3	207 ×4	135 ×6
12.	154 ×4	276 ×3	244 ×4	356 ×2	252 ×3	234 ×4	197 ×5
13.	424 ×2	325 ×3	153 ×6	303 ×3	165 ×5	300 ×3	280 ×3
14.	200 ×4	243 ×3	405 ×2	179 ×5	226 ×4	351 ×2	316 ×3

A Race for the Reds and Blues

Page 94 will tell you how to choose teams and how to race. Check papers after each race.

Race 1. Ready! Go!

Write in figures.

1. Nine thousand twelve
2. Twelve thousand five
3. Four thousand six hundred nine
4. One thousand two hundred eleven
5. Fifty thousand one hundred

Race 2. Watch the signs. Write answers.

1.	14 − 8	17 + 9	5 × 7
2.	8 × 5	25 − 8	29 + 2
3.	35 + 7	9 × 4	37 − 6
4.	4 × 8	26 + 8	36 − 9
5.	9 × 3	64 − 8	48 + 9

Race 3. Write the answers. Watch signs.

1.
$$\begin{array}{r}3\\8\\\underline{+4}\end{array}\qquad\begin{array}{r}9\\7\\\underline{+5}\end{array}\qquad\begin{array}{r}96\\\underline{\times4}\end{array}\qquad\begin{array}{r}83\\\underline{-27}\end{array}\qquad\begin{array}{r}97\\38\\\underline{+49}\end{array}\qquad\begin{array}{r}247\\\underline{\times3}\end{array}$$

2.
$$\begin{array}{r}2\\4\\9\\\underline{+6}\end{array}\qquad\begin{array}{r}9\\\underline{\times5}\end{array}\qquad\begin{array}{r}56\\\underline{+79}\end{array}\qquad\begin{array}{r}95\\\underline{\times3}\end{array}\qquad\begin{array}{r}81\\\underline{-26}\end{array}\qquad\begin{array}{r}28\\3\\434\\\underline{+357}\end{array}$$

Race 4. Write the answers.

1.	784 −231	435 ×2	467 +227	183 ×4	286 ×3
2.	743 −655	825 +97	364 +126	459 ×2	732 −172
3.	784 −32	325 ×3	156 ×5	916 +79	623 −249
4.	439 ×2	470 −63	615 −199	165 ×3	227 ×4

Race 5. Write the answers.

1.	2 × 8	3 + 7	9 − 3	5 × 8
2.	7 + 6	8 − 5	7 × 4	9 − 0
3.	5 × 3	2 + 9	0 × 4	6 − 2
4.	4 × 1	8 × 3	9 − 9	8 + 6
5.	6 + 0	7 + 9	3 × 9	4 × 8

Race 6. Write the answers.

1.	27 ×3	99 +2	31 −2	65 ×3	285 ×3	$5.24 +.85
2.	24 −6	32 ×7	38 +3	23 ×9	537 −88	$0.32 ×7
3.	23 ×8	49 +8	38 ×3	23 −9	416 +79	$3.21 −.64
4.	19 −9	89 ×2	22 −7	56 ×3	400 −56	$2.53 ×3

How Well Have You Learned?

~~Use~~ folded paper. Write products. Check.

1.	73 ×4	85 ×3	25 ×2	29 ×4	243 ×3	204 ×4	120 ×7
2.	37 ×5	43 ×8	78 ×4	42 ×6	105 ×8	143 ×6	208 ×4
3.	51 ×7	64 ×5	98 ×3	72 ×5	123 ×7	436 ×2	201 ×3
4.	94 ×5	51 ×9	97 ×2	34 ×3	232 ×4	465 ×2	264 ×3
5.	58 ×5	45 ×4	86 ×5	34 ×6	421 ×2	132 ×7	408 ×2

Row 1: (237–238, 245)
Row 2: (238, 245–246)
Row 3: (238, 245–246)
Row 4: (238, 245–246)
Row 5: (238, 245–246)

6. At the rate of 460 miles an hour, how far can an airplane travel in 2 hours? (238)

7. An airplane ticket for one person costs $132.50. What will 5 persons pay to take this trip together? (248)

8. A train is traveling 85 miles an hour. An airplane is traveling 5 times as fast as the train. How fast is the airplane traveling per hour? (243)

Helping Yourself

Write answers on folded paper. Study the pages given in red for any row where you need help.

1.	4 ×6	5 ×4	4 ×1	8 ×4	4 ×4	4 ×9	3 ×4	2 ×4	4 ×7	(239–240)
2.	9 ×2	4 ×2	2 ×1	2 ×3	8 ×2	2 ×5	6 ×2	2 ×2	7 ×2	(228–229)
3.	5 ×8	5 ×6	4 ×5	1 ×5	5 ×2	3 ×5	7 ×5	5 ×5	9 ×5	(243–244)
4.	3 ×3	8 ×3	5 ×3	3 ×7	6 ×3	3 ×9	3 ×2	4 ×3	3 ×1	(230–231)
5.	23 ×3	42 ×2	27 ×3	39 ×2	37 ×5	57 ×4	86 ×4	48 ×5	68 ×3	(234–245, 237–238)

6.	124 ×2	312 ×3	218 ×4	182 ×4	274 ×3	186 ×5	258 ×2	(236, 238, 245–246)

7.	24¢ ×3	48¢ ×2	$0.45 ×5	$3.56 ×2	$1.95 ×4	(234, 237, 247–248)

8. Draw a number line. Use it to show that 5 × 9 equals 9 × 5. (219)

9. Draw groups of dots. Show five 2's. (229)

10. Draw groups of dots. Show two 5's. (229)

How Well Are You Doing?

Write the products. Check by going over your work.

1.	72 ×3	38 ×5	40 ×4	89 ×2	164 ×4	278 ×3	$3.35 ×2
2.	58 ×5	45 ×3	15 ×4	13 ×7	173 ×5	249 ×4	$2.31 ×4
3.	47 ×5	30 ×6	19 ×3	36 ×5	161 ×5	432 ×2	$1.56 ×5
4.	28 ×4	39 ×3	84 ×5	90 ×4	270 ×2	130 ×5	$2.80 ×3
5.	43 ×7	30 ×8	15 ×9	41 ×4	100 ×5	229 ×4	$2.38 ×4
6.	52 ×6	43 ×5	37 ×4	94 ×5	301 ×3	130 ×5	$1.68 ×4

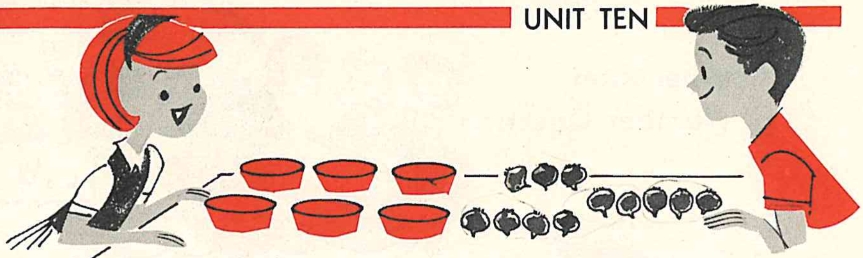
7. There are 8 slices of pineapple in 1 can. How many slices will there be in 5 cans?

8. There are 12 eggs in a dozen. How many eggs are there in 9 dozen?

9. Jerry paid $3.25 for a baseball bat. How much would 3 bats like this cost?

10. Apples cost $1.95 a bushel. What will 5 bushels cost?

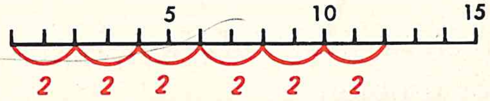
11. Butter costs 69 cents a pound. What will 4 pounds cost?



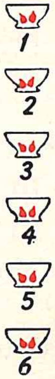
How Many Bowls Are Needed?

1. Joan wants to plant 3 bulbs in a bowl. How many bowls will she need to plant 12 bulbs? Show that your answer is right by finding the answer in another way.
2. Joan found some bowls were not used if she put 3 bulbs in a bowl. Tom told her to plant 2 bulbs in a bowl. How many bowls did she need to plant 12 bulbs? Show that your answer is right.
3. To answer problem 1, Joan thought, "I need to find how many 3's = 12." Would the answer to that question tell how many bowls she needed? Use a drawing to check your answer.
4. Write the number question for problem 2.
5. Here are three ways to find the answer to problem 2. What is done to the 12 in each way?

A



B



C

$$\begin{array}{r l}
12 & \\
-2 & \rightarrow 1 \\
\hline
10 & \\
-2 & \rightarrow 2 \\
\hline
8 & \\
-2 & \rightarrow 3 \\
\hline
6 & \\
-2 & \rightarrow 4 \\
\hline
4 & \\
-2 & \rightarrow 5 \\
\hline
2 & \\
-2 & \rightarrow 6 \\
\hline
\end{array}$$

6. To find the answer for problem 2 you divide 12 into groups of 2. Then you count the groups of 2. In problem 1 what is the size of the groups into which 12 is divided?

Another Kind of Number Question

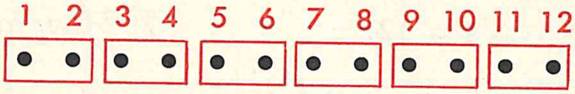
Write the number question for each problem. Find the answer by using a drawing and by subtracting.

1. The boatman is giving the girls a ride around the lake. Three girls can ride at a time. To give all the girls a ride, how many trips must he make?
2. One day he took 15 boys around the lake. If 3 boys rode on each trip, how many trips did he make?
3. Sue is making 12 roses into bouquets. She needs 4 roses for a bouquet. How many bouquets can she make?
4. Bill is making two-wheeled carts. He has 12 wheels. On how many carts can he put wheels?
5. Sally put 8 glasses on the table. She took 2 glasses at a time. How many trips did she make to put all the glasses on the table?
6. Make a drawing to show which of these is the correct number question for problem 5:
   How many are two 8's?
   How many are eight 2's?
   How many 2's equal 8?

🟥 **When you answer such number questions as "How many 2's equal 8?" you are dividing.**

Dividing Numbers to Answer Questions

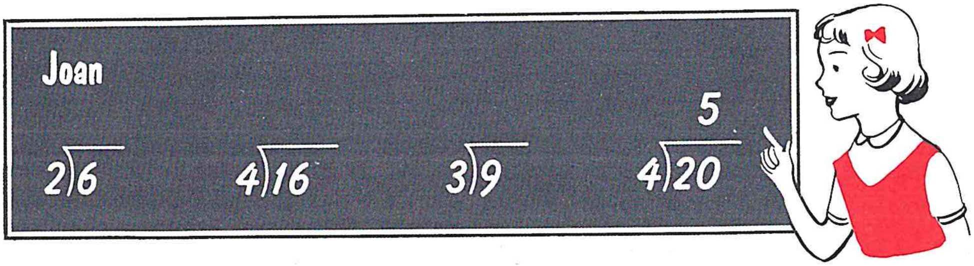
1. Fred has a rock collection. He is putting the rocks into boxes. He puts 2 rocks into a box. To find how many boxes he needed, Fred thought, "How many 2's equal 12?" How can you find how many 2's = 12?
2. To answer problem 1, Bill made a drawing like this:



The drawing shows 12 divided into 2's. How many boxes of 2's are there? In what other ways can you divide 12 into 2's?

Questions 3 through 8 are **division** questions. Answer these questions by dividing the large number into equal parts. Use a dot drawing or number line.

3. How many 3's = 6?
4. How many 2's = 8?
5. How many 3's = 15?
6. How many 4's = 12?
7. How many 4's = 8?
8. How many 2's = 10?
9. By subtracting, show that your answer to question 5 is correct.



A Short Way to Write Division Questions

1. Joan has used a short way to write division questions. The first one is read, "How many 2's equal 6?" Read her next two questions.

Use the short way. Write division questions 2 through 7.

2. How many 4's = 20?
3. How many 3's = 6?
4. How many 4's = 12?
5. How many 2's = 8?
6. How many 3's = 21?
7. How many 5's = 10?

■ **A division question with its answer is called a division fact.**

Joan's work shows one division fact. It is read, "How many 4's = 20? Five."

8. Make facts out of the questions for examples 2 through 7 by writing the answer to each question. If you do not know the answer, use a drawing or subtract to find it.

When many people read the division question $4\overline{)8}$ they say, "How many 4's in 8?" You may say that if you wish, but "How many 4's = 8?" is a better way.

Answering Division Questions

Read each question. Try to think its answer. If you do not know the answer, use dot drawings or subtract.

1. $2\overline{)6}$ **2.** $2\overline{)14}$ **3.** $2\overline{)10}$ **4.** $2\overline{)18}$

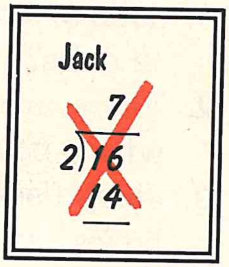
5. $2\overline{)8}$ **6.** $4\overline{)32}$ **7.** $4\overline{)8}$ **8.** $4\overline{)12}$

9. $3\overline{)6}$ **10.** $3\overline{)18}$ **11.** $3\overline{)15}$ **12.** $4\overline{)16}$

13. $3\overline{)21}$ **14.** $3\overline{)12}$ **15.** $2\overline{)16}$ **16.** $4\overline{)20}$

17. Use number line drawings. Check your answers to the last four questions.

18. For the question $2\overline{)16}$ Jack thought the answer was 7. When he wrote the 7, he thought, "That's not right. Seven 2's = 14." Is Jack's way of multiplying a good check?



Divide each number to find the answer. Check by multiplying. The first one has been done.

19. $\begin{array}{r} 7\\ 3\overline{)21}\\ 21\\ \hline \end{array}$ **20.** $2\overline{)16}$ **21.** $2\overline{)12}$ **22.** $3\overline{)18}$

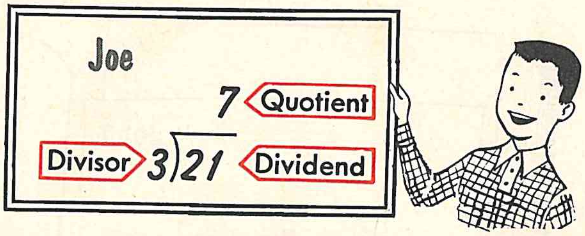
23. Answer division questions 1 through 16. Check each answer by multiplying the way Jack did.

Division Problems

Draw a picture to show how you solved each problem. Draw dots if you cannot draw the things used in the problem.

1. Betty wants to seat all her dolls on chairs. She seats 2 dolls to a chair. How many chairs will she need to seat 12 dolls?
2. There are 18 boys in Bill's class. They play a game with 6 boys to a team. How many teams can be made?
3. Jerry uses 5 pieces of wood to make a box. How many boxes can he make with 20 pieces of wood?
4. Tom had 15 apples. He gave 3 to each girl. How many girls were there?
5. Mother had 32 cookies. She gave each boy 4 cookies. How many boys were there?
6. Jack is making some 4-wheel wagons. He has 20 wheels. He can put wheels on how many wagons?
7. Mother has 8 eggs. She uses 4 eggs for each pie that she makes. How many pies can she make?
8. Write the number questions needed for problems 5 through 7. Write each number question in two different ways.

Names Used in Division



■ **The answer in division is called the quotient.**
The number you divide by is called the divisor.
The dividend is the number that is divided into parts.

In examples 1 through 4 a part of the division is missing. For each example tell whether the dividend, the divisor, or the quotient is missing.

1. $\begin{array}{r}\boxed{?}\\ 2\overline{)14}\end{array}$ 2. $\begin{array}{r}4\\ 5\overline{)\boxed{?}}\end{array}$ 3. $\begin{array}{r}4\\ \boxed{?}\overline{)16}\end{array}$ 4. $\begin{array}{r}\boxed{?}\\ 5\overline{)15}\end{array}$

Write the quotients.

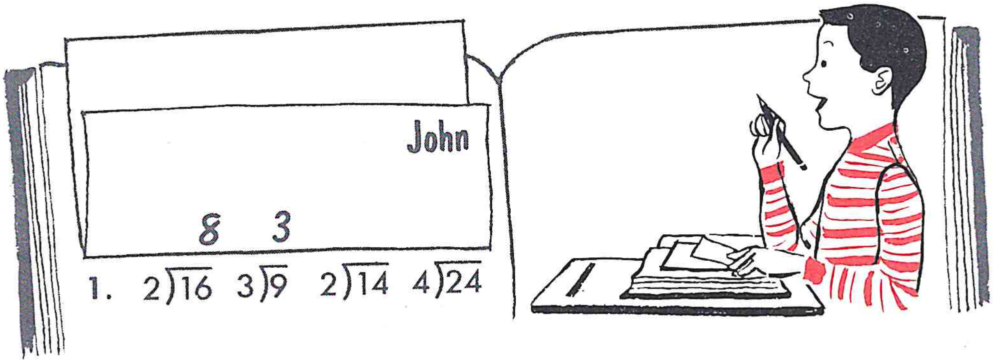
5. $\begin{array}{r}\boxed{?}\\ 4\overline{)32}\end{array}$ $\begin{array}{r}\boxed{?}\\ 3\overline{)21}\end{array}$ $\begin{array}{r}\boxed{?}\\ 2\overline{)18}\end{array}$ $\begin{array}{r}\boxed{?}\\ 5\overline{)30}\end{array}$ $\begin{array}{r}\boxed{?}\\ 4\overline{)12}\end{array}$ $\begin{array}{r}\boxed{?}\\ 2\overline{)6}\end{array}$

Write the dividends.

6. $\begin{array}{r}2\\ 3\overline{)\boxed{?}}\end{array}$ $\begin{array}{r}2\\ 5\overline{)\boxed{?}}\end{array}$ $\begin{array}{r}3\\ 4\overline{)\boxed{?}}\end{array}$ $\begin{array}{r}8\\ 2\overline{)\boxed{?}}\end{array}$ $\begin{array}{r}4\\ 2\overline{)\boxed{?}}\end{array}$ $\begin{array}{r}3\\ 3\overline{)\boxed{?}}\end{array}$

Write the quotients. Check by multiplying as Jack did on page 259.

7. $4\overline{)32}$ $3\overline{)9}$ $4\overline{)24}$ $3\overline{)18}$ $2\overline{)10}$ $3\overline{)27}$ $5\overline{)10}$
8. $2\overline{)6}$ $3\overline{)15}$ $4\overline{)28}$ $2\overline{)8}$ $3\overline{)24}$ $2\overline{)14}$ $4\overline{)16}$
9. $3\overline{)12}$ $2\overline{)18}$ $3\overline{)21}$ $2\overline{)12}$ $4\overline{)12}$ $2\overline{)16}$ $4\overline{)20}$



How Quickly Can You Answer Division Questions?

Write the answer to each question as quickly as you can. Your teacher will tell you when to start and stop. Ready!

1. $2\overline{)16}$ $3\overline{)9}$ $2\overline{)14}$ $4\overline{)24}$ $3\overline{)18}$

2. $4\overline{)8}$ $2\overline{)12}$ $3\overline{)6}$ $4\overline{)12}$ $3\overline{)21}$

3. $4\overline{)16}$ $3\overline{)12}$ $3\overline{)24}$ $2\overline{)18}$ $4\overline{)32}$

4. $2\overline{)4}$ $4\overline{)28}$ $3\overline{)15}$ $3\overline{)27}$ $4\overline{)20}$

Many third grade pupils cannot answer division questions quickly because they do not know the facts well.

Here is one good way to study a fact. Look at the fact. Read it this way, "How many threes equal 15? Five. Five 3's equal 15."

$$\boxed{\begin{array}{r} 5 \\ 3\overline{)15} \\ \underline{15} \end{array}}$$

Now close your eyes. Think the fact. Open your eyes. See if the fact is as you thought it.

Ways to Study Division Facts

Read each fact. Think about it with your eyes closed.

1.	$\begin{array}{r} 3 \\ 5\overline{)15} \\ \underline{15} \end{array}$	$\begin{array}{r} 5 \\ 4\overline{)20} \\ \underline{20} \end{array}$	$\begin{array}{r} 2 \\ 2\overline{)4} \\ \underline{4} \end{array}$	$\begin{array}{r} 9 \\ 5\overline{)45} \\ \underline{45} \end{array}$	$\begin{array}{r} 2 \\ 3\overline{)6} \\ \underline{6} \end{array}$
2.	$\begin{array}{r} 9 \\ 3\overline{)27} \\ \underline{27} \end{array}$	$\begin{array}{r} 4 \\ 2\overline{)8} \\ \underline{8} \end{array}$	$\begin{array}{r} 6 \\ 5\overline{)30} \\ \underline{30} \end{array}$	$\begin{array}{r} 7 \\ 3\overline{)21} \\ \underline{21} \end{array}$	$\begin{array}{r} 7 \\ 2\overline{)14} \\ \underline{14} \end{array}$
3.	$\begin{array}{r} 6 \\ 3\overline{)18} \\ \underline{18} \end{array}$	$\begin{array}{r} 5 \\ 3\overline{)15} \\ \underline{15} \end{array}$	$\begin{array}{r} 9 \\ 4\overline{)36} \\ \underline{36} \end{array}$	$\begin{array}{r} 3 \\ 4\overline{)12} \\ \underline{12} \end{array}$	$\begin{array}{r} 4 \\ 4\overline{)16} \\ \underline{16} \end{array}$
4.	$\begin{array}{r} 8 \\ 5\overline{)40} \\ \underline{40} \end{array}$	$\begin{array}{r} 8 \\ 4\overline{)32} \\ \underline{32} \end{array}$	$\begin{array}{r} 5 \\ 2\overline{)10} \\ \underline{10} \end{array}$	$\begin{array}{r} 3 \\ 2\overline{)6} \\ \underline{6} \end{array}$	$\begin{array}{r} 5 \\ 5\overline{)25} \\ \underline{25} \end{array}$

Cover the quotients for each row of the facts above. Read the question. Try to give the quotient. Study facts you do not know by reading the fact carefully. Then close your eyes and think the fact. Write the facts you are studying. Then check with facts given on this page.

5. Think the answer to these questions.

How many 3's = 15?	How many 4's = 8?
How many 4's = 28?	How many 3's = 18?

6. Use a number line. Show how the answer to $2\overline{)10}$ may be found.

Study These Facts Well

Read each fact. Try to "see" the fact with your eyes closed. Open your eyes. Check. Were you seeing the fact correctly?

1. $\begin{array}{r} 3 \\ 3\overline{)9} \\ \underline{9} \end{array}$ $\begin{array}{r} 7 \\ 4\overline{)28} \\ \underline{28} \end{array}$ $\begin{array}{r} 2 \\ 5\overline{)10} \\ \underline{10} \end{array}$ $\begin{array}{r} 7 \\ 5\overline{)35} \\ \underline{35} \end{array}$ $\begin{array}{r} 6 \\ 2\overline{)12} \\ \underline{12} \end{array}$ $\begin{array}{r} 8 \\ 3\overline{)24} \\ \underline{24} \end{array}$ $\begin{array}{r} 4 \\ 3\overline{)12} \\ \underline{12} \end{array}$

2. $\begin{array}{r} 6 \\ 4\overline{)24} \\ \underline{24} \end{array}$ $\begin{array}{r} 1 \\ 5\overline{)5} \\ \underline{5} \end{array}$ $\begin{array}{r} 4 \\ 5\overline{)20} \\ \underline{20} \end{array}$ $\begin{array}{r} 8 \\ 2\overline{)16} \\ \underline{16} \end{array}$ $\begin{array}{r} 2 \\ 4\overline{)8} \\ \underline{8} \end{array}$ $\begin{array}{r} 9 \\ 2\overline{)18} \\ \underline{18} \end{array}$ $\begin{array}{r} 1 \\ 4\overline{)4} \\ \underline{4} \end{array}$

Cover the quotient part of each fact. Read each question. Try to give the quotient. Then uncover to see if you are correct. For those you do not get, study by reading the whole fact. Close your eyes. Think the fact. Then check.

3. Think the answer to these questions.
   How many 4's = 32?   How many 2's = 8?
   How many 3's = 15?   How many 5's = 35?

4. Show by subtracting how the answer to $4\overline{)20}$ may be found.

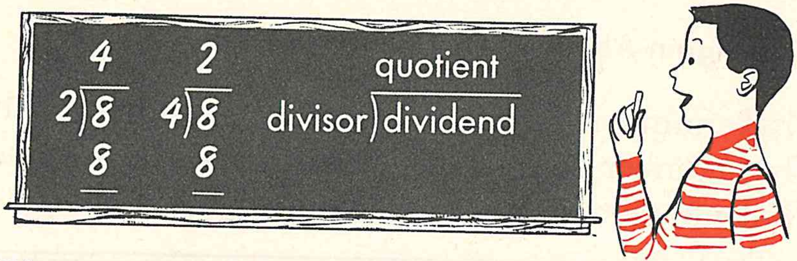
No Pencils, Please!

Say the quotients quickly.

5. $5\overline{)20}$ $3\overline{)27}$ $4\overline{)32}$ $3\overline{)15}$ $5\overline{)35}$ $3\overline{)12}$ $4\overline{)24}$

6. $4\overline{)36}$ $3\overline{)18}$ $5\overline{)30}$ $3\overline{)24}$ $4\overline{)8}$ $4\overline{)4}$ $5\overline{)40}$

7. $5\overline{)45}$ $4\overline{)20}$ $4\overline{)12}$ $3\overline{)21}$ $4\overline{)28}$ $5\overline{)5}$ $4\overline{)16}$



Bill Discovers Pairs of Division Facts

1. One day Bill was studying division facts. He said, "Look! The quotient and divisor can trade places in every division fact." Test Bill's discovery on these division facts.

$\overset{4}{3\overline{)12}}$ $\overset{5}{4\overline{)20}}$ $\overset{2}{5\overline{)10}}$ $\overset{8}{2\overline{)16}}$ $\overset{6}{3\overline{)18}}$ $\overset{2}{3\overline{)6}}$

2. Nearly all division facts come in pairs. Each fact here is one half of a pair. Write the other half of the pair of facts.

$\overset{7}{4\overline{)28}}$ $\overset{3}{7\overline{)21}}$ $\overset{8}{3\overline{)24}}$ $\overset{3}{6\overline{)18}}$ $\overset{9}{2\overline{)18}}$ $\overset{9}{5\overline{)45}}$ $\overset{8}{4\overline{)32}}$

$\overset{8}{5\overline{)40}}$ $\overset{5}{6\overline{)30}}$ $\overset{9}{3\overline{)27}}$ $\overset{3}{5\overline{)15}}$ $\overset{7}{2\overline{)14}}$ $\overset{9}{4\overline{)36}}$ $\overset{6}{4\overline{)24}}$

3. Write the missing part of each fact.

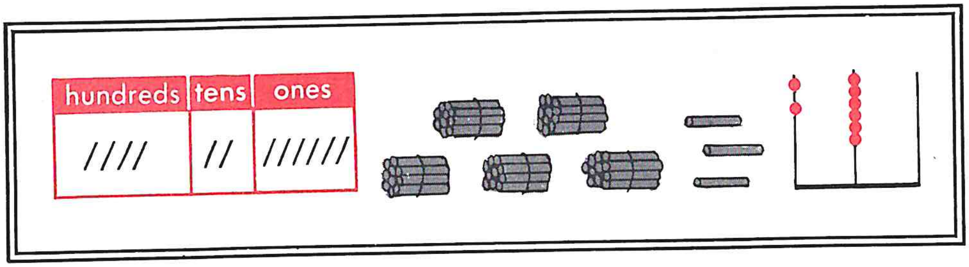
$\overset{4}{\square\overline{)28}}$ $\overset{\square}{3\overline{)15}}$ $\overset{5}{4\overline{)\square}}$ $\overset{7}{4\overline{)\square}}$ $\overset{6}{\square\overline{)30}}$ $\overset{\square}{5\overline{)35}}$ $\overset{7}{\square\overline{)28}}$

$\overset{\square}{4\overline{)32}}$ $\overset{3}{\square\overline{)12}}$ $\overset{5}{\square\overline{)45}}$ $\overset{\square}{5\overline{)40}}$ $\overset{4}{\square\overline{)16}}$ $\overset{9}{\square\overline{)36}}$ $\overset{5}{5\overline{)\square}}$

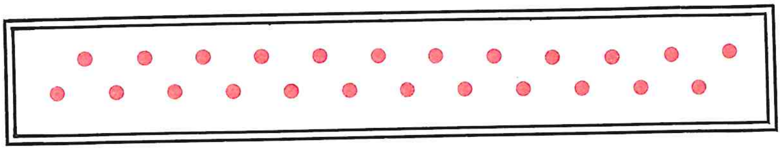
$\overset{3}{9\overline{)\square}}$ $\overset{1}{\square\overline{)5}}$ $\overset{2}{4\overline{)\square}}$ $\overset{7}{\square\overline{)21}}$ $\overset{\square}{4\overline{)4}}$ $\overset{\square}{3\overline{)18}}$ $\overset{6}{4\overline{)\square}}$

Thinking Again About What Number Means

1. What number is shown on the place-value chart? What number do the tens bundles and the ones show? What number does the drawing of the abacus show?



2. Make a place-value chart. Have four rows for showing numbers. On the first row show the number 80. On the second row show the number 291. On the third row show the number 610. On the fourth show 506.
3. Use figures. Write the number that is eight tens and six ones. Write the number that is eleven tens and two ones.
4. This dot drawing shows the number 24.



Does this drawing show that twenty-four means two 10's and four 1's? In this drawing what does the number 24 mean?

5. In the number 156 what figure is in tens place?
6. Are 15 tens equal to one hundred fifty ones? Use a drawing of bundles of tens. Show that your answer is correct.

Work Hard for Your Team!

Race 1. Write sums on folded paper.

1.	6 +5	5 +2	4 +3	9 +6	3 +9	8 +5	7 +3
2.	4 +8	9 +7	5 +8	6 +7	7 +4	8 +3	3 +8

Race 2. Write the products on folded paper.

1.	67 ×4	84 ×4	53 ×4	29 ×4	701 ×4	286 ×4	345 ×4
2.	24 ×6	41 ×8	34 ×7	40 ×9	324 ×5	103 ×7	423 ×4

Race 3. Write the products on folded paper.

1.	131 ×5	213 ×5	518 ×4	469 ×3	214 ×5	254 ×4
2.	654 ×5	476 ×5	954 ×3	356 ×2	672 ×4	634 ×3

Race 4. Write quotients on folded paper.

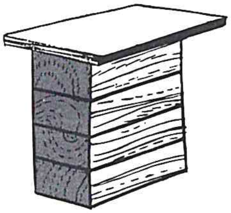
1.	$3\overline{)9}$	$3\overline{)24}$	$5\overline{)20}$	$2\overline{)16}$	$3\overline{)12}$	$4\overline{)28}$
2.	$5\overline{)10}$	$4\overline{)24}$	$5\overline{)40}$	$4\overline{)16}$	$4\overline{)4}$	$2\overline{)12}$
3.	$5\overline{)35}$	$4\overline{)8}$	$2\overline{)10}$	$4\overline{)12}$	$5\overline{)15}$	$3\overline{)27}$
4.	$3\overline{)18}$	$4\overline{)32}$	$3\overline{)15}$	$2\overline{)8}$	$4\overline{)20}$	$5\overline{)30}$
5.	$4\overline{)36}$	$3\overline{)21}$	$5\overline{)45}$	$2\overline{)14}$	$2\overline{)4}$	$5\overline{)25}$

What Number Question Shall I Use?

Write the number question needed to solve each problem. Then answer it.

Think. Does the problem want equal groups put together? If it does, you need a multiplication number question. Or does the problem want to know how many equal groups there are? If it does, you need a division number question. Think carefully.

1. Jack sells ice cream cones to people at a picnic. He has a rack that holds 6 cones. How many trips does he have to make to sell 24 cones to the people?



2. Alice used 4 blocks to hold up a shelf. Each block she used was 4 inches high. How high was the shelf from the floor?
3. Bill was told to put 3 apples in each bag. There were 18 apples. How many bags did he need?
4. Five people can ride in each car. How many cars are needed to carry 15 people?
5. Joe put 5 books in each stack. How many stacks did he make from 25 books?
6. Jack found 4 eggs in each nest. There were 5 nests in all. How many eggs did he find?
7. Mother made 18 pancakes. If each child got 3 pancakes, how many children were there?

Must I Add, Subtract, Multiply, or Divide?

Decide what is the best way to find the answer. If you think it is best to multiply, write M on your paper. For subtract, write S. Write A for add, and D for divide.

1. Seven boys and 19 more are how many boys?
2. There are 8 girls on a team. On how many teams will there be 32 girls?
3. How many children are there in 5 rows, if there are 6 children in each row?
4. How many more are needed to make a score of 7 equal a score of 12?
5. A stick 6 feet long is how many feet longer than a stick 4 feet long?
6. Into how many sets of 4 can 12 glasses be divided?
7. How many couples (2 children) equal 14 children?
8. Ann read 5 pages a day. How many pages did she read in 8 days?
9. Mary had 35 picture postcards. She shared them equally among 5 children. How many postcards did each child receive?
10. Joe gave 5 marbles to each of 8 boys. How many marbles did Joe have to begin with?

▶ Use folded paper. Write the quotients.

11. $4\overline{)36}$ $8\overline{)24}$ $6\overline{)18}$ $3\overline{)18}$ $7\overline{)21}$ $5\overline{)30}$

12. $4\overline{)16}$ $5\overline{)35}$ $3\overline{)27}$ $4\overline{)28}$ $5\overline{)25}$ $3\overline{)15}$

13. $8\overline{)40}$ $6\overline{)12}$ $4\overline{)20}$ $3\overline{)24}$ $7\overline{)35}$ $8\overline{)16}$

A Game You Will Like

Let's play "Winner Stands." The teacher asks a number question like, "How many 2's equal 8?" Only the girl standing and the boy in the seat beside her may answer. If the boy answers first, he gets to stand by anyone he chooses. If the girl answers first, she stands beside another desk. Then the teacher asks another number question. Play the game. Begin with these questions:

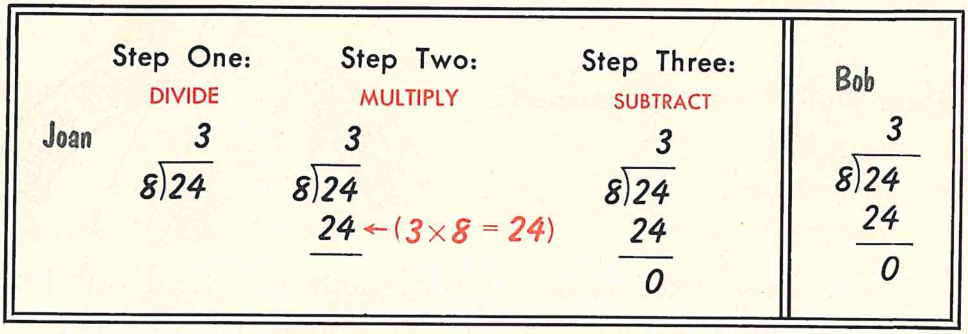
1. How many 6's = 12?
2. How many 7's = 14?
3. How many 8's = 24?
4. How many are six 3's?
5. How many are 3 from 11?
6. How many 8's = 16?
7. How many 4's = 36?
8. How many 5's = 15?
9. How many are 9 and 5?
10. How many are six 5's?

Use ~~folded~~ copy paper. Write the quotients.

11. $5\overline{)30}$ $4\overline{)20}$ $7\overline{)21}$ $4\overline{)36}$ $6\overline{)30}$ $9\overline{)27}$

12. $8\overline{)32}$ $4\overline{)28}$ $2\overline{)14}$ $3\overline{)24}$ $3\overline{)12}$ $6\overline{)12}$

13. $3\overline{)27}$ $4\overline{)12}$ $3\overline{)21}$ $5\overline{)25}$ $3\overline{)18}$ $5\overline{)45}$



Proving Your Division Is Right

1. Joan found the answer to the question, "How many 8's equal 24?" She used three steps. She wrote all the steps for you to see. Let's look at them.

In **Step One** she wrote the quotient figure that she thought was right. That is, she divided.

In **Step Two** she began her proof. She multiplied to find how many three 8's equal. What was the product? Where did she write it after she found it?

In **Step Three** she compared the product 24 and the dividend 24. That is, she subtracted 24 from 24. The answer was 0. This showed there was no difference and that the product 24 exactly equals the dividend 24.

2. Bob proved his division, too. Why does his way look easier than Joan's? What did Bob think to find 24?

Divide. Prove your division the way Bob did.

3. 8)24 7)28 4)16 6)18 9)36 3)24 9)45

4. 5)15 3)12 3)18 7)21 4)24 4)20 3)27

5. 3)21 8)32 4)32 7)14 5)20 6)30 4)36

How Well Have You Learned?

Do these exercises. It will help you find out how well you have learned things you studied in Unit Ten.

1. Find the answer to "How many 2's equal 8?" by subtracting equal groups. (255)
2. Show that you can find how many 4's = 16 by a drawing. (257)
3. Use a number line to find how many 3's = 9. (255)
4. How is the question $4\overline{)8}$ read? (258)
5. The number 12 is written twice in the division fact $\begin{array}{r} 6 \\ 2\overline{)12}. \\ \underline{12} \end{array}$ Why? (259, 271)
6. In the division fact in example 5, what number is the quotient? (261)
7. What are three ways to study a division fact? (262–64)
8. What are three ways to check the answer to a division question? (255)
9. The fact $\begin{array}{r} 4 \\ 7\overline{)28} \end{array}$ is only half of a pair of division facts. What is the other fact? (265)
10. Use a short way. Write the number question, "How many 2's equal 14?" (258)

Helping Yourself

1. Can the answer to "How many 6's = 18?" be found by using a drawing? Show that your answer is right. (255)
2. Use a number line. Show the answer to the number question, "How many 3's = 24?" (255)
3. Can multiplication be used to check the answers to division questions? Use the question $2\overline{)14}$. Show that you have answered correctly. (259)
4. When you find how many 7's equal 28, what is the size of one of the equal parts? (257)
5. What is the best way to read the number question $8\overline{)40}$? (258)
6. What do you say when you read the fact $\begin{array}{r}4\\2\overline{)8}\end{array}$? (258)
7. Show the number 835 on a place-value chart. (266)
8. Would you use a place-value chart or a dot drawing to show that 26 can mean 26 ones? (266)

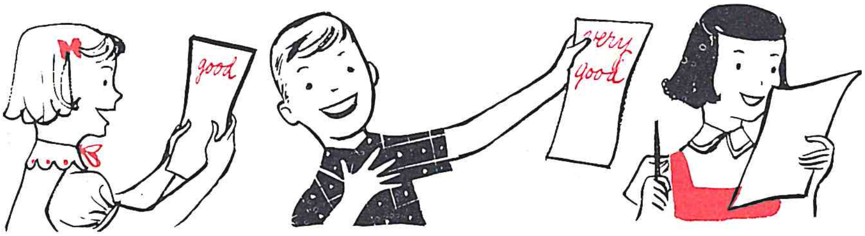
Cover the quotients with folded paper. Divide. (259, 263)

9\.

$$\begin{array}{r}4\\7\overline{)28}\\\underline{28}\\0\end{array}\qquad\begin{array}{r}5\\9\overline{)45}\\\underline{45}\\0\end{array}\qquad\begin{array}{r}6\\6\overline{)36}\\\underline{36}\\0\end{array}\qquad\begin{array}{r}3\\8\overline{)24}\\\underline{24}\\0\end{array}\qquad\begin{array}{r}4\\9\overline{)36}\\\underline{36}\\0\end{array}\qquad\begin{array}{r}8\\5\overline{)40}\\\underline{40}\\0\end{array}$$

10. Divide. Use multiplication and subtraction to check. (255, 259)

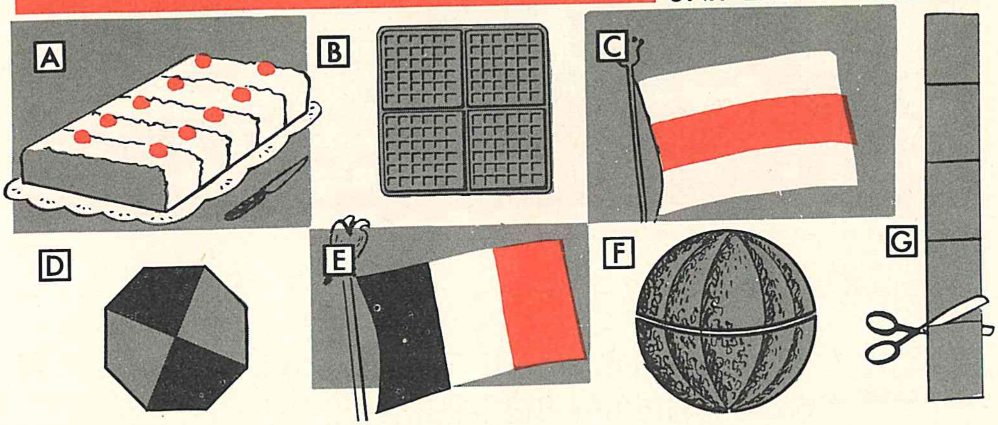
$$6\overline{)24}\qquad 9\overline{)27}\qquad 8\overline{)16}\qquad 4\overline{)36}\qquad 8\overline{)32}\qquad 9\overline{)45}$$



How Well Are You Doing?

1. Ann wants to put 8 cookies on each plate. She has 32 cookies. How many plates does she need?
2. Jack has 36 pages to read. If he reads 9 pages a day, how many days will it take to finish his reading?
3. There are 6 roses blooming on each bush. Ann has 4 rose bushes. How many roses are blooming in all?
4. John's father drove 125 miles in the morning. He drove 230 miles in the afternoon. How many miles did he drive in all?
5. Six children sit at each table in the lunchroom. How many children are there at 5 tables?
6. Tom gathered 20 eggs. He put 12 of them into an egg box. How many were not in the box?
7. Mary baked 36 cookies. She wants to put them into a box. She can put 9 cookies in a row. How many rows will there be?
8. A quart of milk will fill 4 glasses. How many quarts must I have to fill 24 glasses with milk?
9. John pulled 45 carrots from his garden. He put 5 carrots in a bunch. How many bunches of carrots did he make?

UNIT ELEVEN

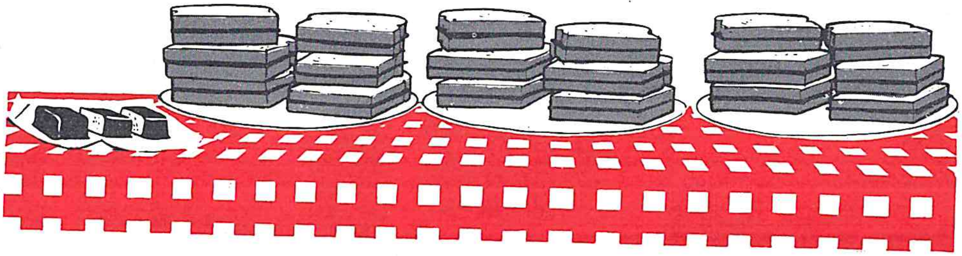


More About Equal Parts of a Whole

1. Some boys had a cake. One boy said, "Let me cut the cake so each boy will get one fifth of it." Does picture A show the cake cut into the right number of parts? How many boys were there?

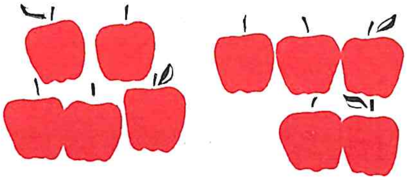
- **When a whole is cut into 5 equal parts, each part is one fifth of the whole. One fifth may be written $\frac{1}{5}$.**
- **The 5 in $\frac{1}{5}$ tells that the whole was cut into five equal parts.**

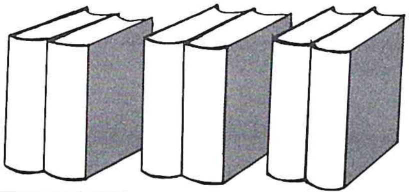
2. What does the 3 in $\frac{1}{3}$ tell? The 2 in $\frac{1}{2}$? The 4 in $\frac{1}{4}$?
3. Show $\frac{1}{2}$ of your pencil. Show $\frac{1}{3}$ of it. Show $\frac{1}{4}$. Which of the parts you showed was the smallest? Which was the largest?
4. Which would you rather have, $\frac{1}{5}$ or $\frac{1}{4}$ of your favorite pie? Draw a picture to tell why.
5. Look at each picture at the top of the page. Tell into how many equal parts the whole is divided. Give the name of one of the equal parts.



Naming the Part

1. Three boys shared equally in dividing a candy bar. What part of the bar did each boy get?
2. There were eight marbles to be divided among four boys. What part of the marbles should each boy get?
3. If 5 girls share 10 sheets of paper, what part of the 10 sheets should each girl get?
4. At a picnic Ann put 18 sandwiches on 3 plates. She put the same number of sandwiches on each plate. What part of the sandwiches was placed on each plate?
5. The things pictured below are divided into equal groups. Tell what part of the whole each equal group is.


A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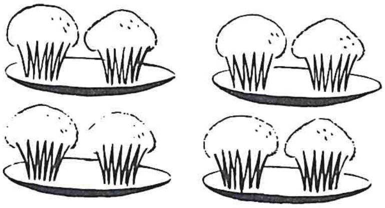
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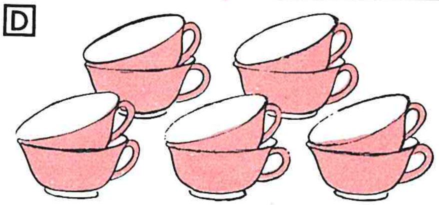
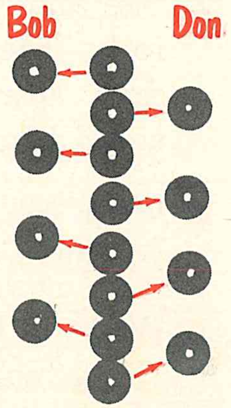

D

Making Equal Groups

1. Bob and Don were to share 8 doughnuts equally. How many doughnuts would each boy get? Show with a drawing that your answer is correct.
2. Joan found the answer to problem 1 in this way. She thought, "There are two boys. Each boy's part is one half of the doughnuts. To find one half of 8, you divide by 2."

   To prove her answer was right Joan made this drawing.



3. How many doughnuts did each boy get? Is dividing 8 by 2 the same as finding $\frac{1}{2}$ of 8?
4. Three boys shared 12 pieces of candy. How many pieces of candy were there in each boy's share? Divide to find the answer. Use a drawing to show that your answer is correct. What part of the candy did each boy get?
5. A girl had 12 roses. She made them into 4 bouquets. Each bouquet had the same number of roses. What part of the roses did she use in each bouquet?

■ **You can find equal parts of a number by using a drawing. You can also find equal parts of a number by dividing.**

Dividing into Equal Groups

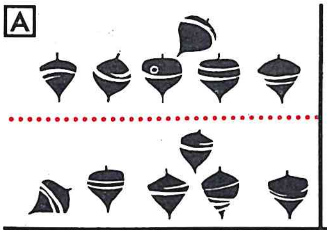
1. Ann, Jane, and Mary are peeling apples. Each girl wants to peel her share. There are 3 girls and 24 apples. How many apples should each girl peel?

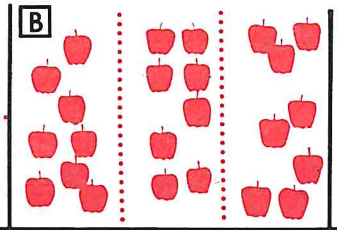
   Write the division fact for this problem. Find the picture that shows how many apples each girl should peel.

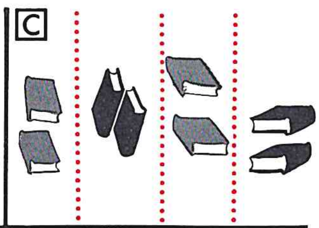
2. Sue and Ann are drying dishes. There are 18 plates to be dried. How many plates will each of the girls dry? Draw a dot for each plate. Divide the dots into 2 equal groups. How many dots are there in each group?

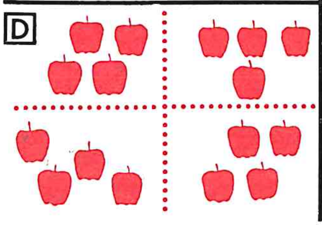
🟥 **When you divide a group of like things into equal parts, you have the same number of like things in each part.**

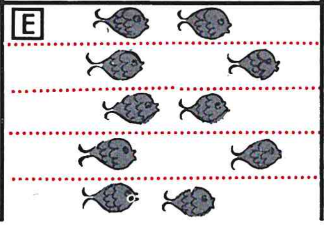
3. Write a division fact for each picture below. Think, "How many in all? How many equal groups?" For picture A write: $\begin{array}{r} 6 \\ 2\overline{)12} \end{array}$

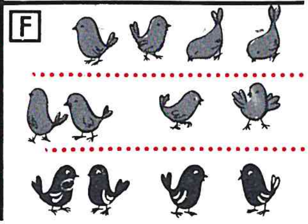






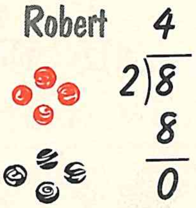






Finding One Half of a Number of Things

1. Study page 104 again. It tells you about $\frac{1}{2}$ of a whole. A group of like things can also be made into 2 equal parts. On page 109 you found $\frac{1}{2}$ of some groups of things. Study page 109 again. At that time you did not know how to divide by 2. Now you do. See how dividing helps in the next problem.



2. Robert wanted to divide 8 marbles into two equal groups. He said, "That will be one half of the marbles in each group. How many will that be?"

■ **To find one half of a number, divide the number into 2 equal parts. This means you divide the number by 2. Each of the two equal parts is $\frac{1}{2}$ of the whole group.**

3. Find one half of each of these numbers by dividing by 2:

   6   14   16   10   8   2   18   4   12

4. Jerry has a board 14 inches long. He wants to cut it in half. How many inches long will one half of the board be?
5. Ann has 18 apples. She wants to peel $\frac{1}{2}$ of them for a pie, and keep $\frac{1}{2}$ of the apples for tomorrow. How many apples should she peel?
6. Read and then say the answers. The first is read, "One half of 8 is 4."

   $\frac{1}{2}$ of 8 $\frac{1}{2}$ of 6 $\frac{1}{2}$ of 18 $\frac{1}{2}$ of 10

   $\frac{1}{2}$ of 12 $\frac{1}{2}$ of 16 $\frac{1}{2}$ of 4 $\frac{1}{2}$ of 14

Using Two in Division

Division will be much easier if you know the division facts well. Make helper cards (page 40) for facts in these tables. Try to say every quotient correctly. Then look on the back of your helper card and see if your quotient is correct.

Division Facts, Dividing by 2

$$\begin{array}{r}1\\2\overline{)2}\end{array}\quad\begin{array}{r}2\\2\overline{)4}\end{array}\quad\begin{array}{r}3\\2\overline{)6}\end{array}\quad\begin{array}{r}4\\2\overline{)8}\end{array}\quad\begin{array}{r}5\\2\overline{)10}\end{array}\quad\begin{array}{r}6\\2\overline{)12}\end{array}\quad\begin{array}{r}7\\2\overline{)14}\end{array}\quad\begin{array}{r}8\\2\overline{)16}\end{array}\quad\begin{array}{r}9\\2\overline{)18}\end{array}$$

Division Facts, Quotient 2

$$\begin{array}{r}2\\1\overline{)2}\end{array}\quad\begin{array}{r}2\\2\overline{)4}\end{array}\quad\begin{array}{r}2\\3\overline{)6}\end{array}\quad\begin{array}{r}2\\4\overline{)8}\end{array}\quad\begin{array}{r}2\\5\overline{)10}\end{array}\quad\begin{array}{r}2\\6\overline{)12}\end{array}\quad\begin{array}{r}2\\7\overline{)14}\end{array}\quad\begin{array}{r}2\\8\overline{)16}\end{array}\quad\begin{array}{r}2\\9\overline{)18}\end{array}$$

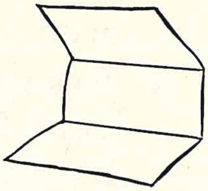
Thinking of multiplication pairs will help you remember division pairs:

$$\overbrace{\begin{array}{r}4\\\times2\\\hline8\end{array}\quad\begin{array}{r}2\\\times4\\\hline8\end{array}}\qquad\overbrace{\begin{array}{r}4\\2\overline{)8}\end{array}\quad\begin{array}{r}2\\4\overline{)8}\end{array}}\qquad\qquad\overbrace{\begin{array}{r}7\\\times2\\\hline14\end{array}\quad\begin{array}{r}2\\\times7\\\hline14\end{array}}\qquad\overbrace{\begin{array}{r}7\\2\overline{)14}\end{array}\quad\begin{array}{r}2\\7\overline{)14}\end{array}}$$

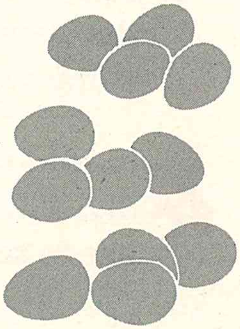
1. Write two multiplication facts and two division facts using 2, 3, 6; 2, 5, 10; 2, 8, 16; 2, 9, 18; 6, 2, 12; 2, 2, 4; 1, 2, 2.
2. Mary gave 10 pencils to Betty and Jane. If she gave each girl the same number of pencils, how many did she give to each girl?
3. Tom cut a sixteen-inch wire into 8 equal parts. How many inches long was each part?

Dividing Things into Thirds

Study pages 107 and 275 again. Those pages tell you something about $\frac{1}{3}$ of a whole.



A group of like things can also be made into 3 equal parts. Which picture on page 276 shows a group of things divided into 3 equal parts, or groups?



1. Mary divided 12 eggs into 3 equal groups. How many eggs were there in each group? Each group is called $\frac{1}{3}$ of the 12 eggs. What does the 3 in $\frac{1}{3}$ tell you?

■ **To find $\frac{1}{3}$ of a number, divide the number by 3.**

2. Find $\frac{1}{3}$ of each of these numbers.

   21 6 27 15 9 18 3 24 12

3. Helen had 21 paper dolls. She gave $\frac{1}{3}$ of them to Mary. How many paper dolls did Mary get?
4. Ellen had 18¢. She spent $\frac{1}{3}$ of her money for an air mail stamp. What did the stamp cost?
5. Jim had a board that was 27 inches long. He cut off $\frac{1}{3}$ of the board. How many inches did he cut off the board?
6. Read and say the answers. The first one is read, "$\frac{1}{3}$ of 24 is 8."

   $\frac{1}{3}$ of 24
   $\frac{1}{3}$ of 12
   $\frac{1}{3}$ of 3
   $\frac{1}{3}$ of 15
   $\frac{1}{3}$ of 18
   $\frac{1}{3}$ of 6
   $\frac{1}{3}$ of 9
   $\frac{1}{3}$ of 27
   $\frac{1}{3}$ of 21

Using Three in Division

1. Mother had 6 eggs. She used them to make 3 cakes. She put the same number of eggs in each cake. How many eggs did she put in a cake?
2. Jack picked 27 ears of corn. Three persons bought the corn. If each person bought $\frac{1}{3}$ of the corn Jack picked, how many ears did each buy?
3. Jerry wants to copy 24 words in 3 columns. He wants the same number of words in each column. How many words should he write in a column?

Study these tables. Make helper cards for each division fact. Which of these division facts did you use to solve problem 1 above? Problem 2? Problem 3?

Division Facts, Dividing by 3

$$\begin{array}{rrrrrrrrr} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3\overline{)3} & 3\overline{)6} & 3\overline{)9} & 3\overline{)12} & 3\overline{)15} & 3\overline{)18} & 3\overline{)21} & 3\overline{)24} & 3\overline{)27} \end{array}$$

Division Facts, Quotient 3

$$\begin{array}{rrrrrrrrr} 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3 \\ 1\overline{)3} & 2\overline{)6} & 3\overline{)9} & 4\overline{)12} & 5\overline{)15} & 6\overline{)18} & 7\overline{)21} & 8\overline{)24} & 9\overline{)27} \end{array}$$

Each problem on this page tells you how many in all. In problem 1 there were 6 eggs in all. In problem 2 there were 27 ears of corn in all. In problem 3 Jerry has 24 words to write in all. These problems also tell how many equal groups there are. How many equal groups were there in problem 1? In 2? In 3?

Each problem asks you to find how many in each equal group.

🟥 **To find how many in each equal group, you divide.**

For problem 1 you wrote: $3\overset{2}{\overline{)6}}$. This can be read, "How many 3's equal 6? The answer is 2." But since you are dividing 6 into 3 equal groups, $3\overset{2}{\overline{)6}}$ can also be read, "6 divided by 3 = 2."

4. Sometimes we write "divided by" in a different way, with the sign ÷. Read and answer these division questions. Read the first one, "27 divided by 9 equals 3."

$27 \div 9 = \boxed{?}$ $24 \div 8 = \boxed{?}$ $16 \div 4 = \boxed{?}$ $21 \div 7 = \boxed{?}$

$18 \div 9 = \boxed{?}$ $15 \div 5 = \boxed{?}$ $12 \div 4 = \boxed{?}$ $24 \div 3 = \boxed{?}$

Write the division questions for the problems below. Then find the answers. Draw pictures to show that your answers are right. See page 277.

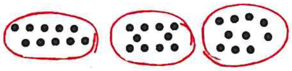
5. A storekeeper has 24 peanut bars. He has 8 bags. He wants to put the same number of bars in each bag. How many bars will there be in a bag?

6. Jane paid 15¢ for 5 apples. What did each apple cost?

7. Joan wants to tie 21 sticks into 7 equal bundles. How many sticks should she put in each bundle?

8. Mother baked 24 cupcakes. She put chocolate icing on $\frac{1}{3}$ of them. How many had chocolate icing on them?

Dividing Larger Numbers



Jack

$$\begin{array}{rl} 10 & \\ 3\overline{)30} & \\ 30 & \text{(3 x 1 ten)} \\ \hline \end{array}$$

1. Jack had 30 marbles. He put the same number of marbles into each pocket. If he put them into 3 pockets, how many marbles were there in each pocket?

   Is Jack's picture for this problem correct? Is his division correct? Explain how Sue found her answer.

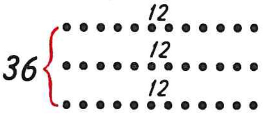
Sue

$$30 = 3 \text{ tens} \qquad \begin{array}{l} 1 \text{ ten or } 10 \\ 3\overline{)3 \text{ tens}} \end{array}$$

2. Divide. Prove your work as Jack did. That is, multiply the quotient figure by the divisor when you subtract.

$2\overline{)40}$ $2\overline{)80}$ $3\overline{)90}$ $3\overline{)60}$ $4\overline{)80}$ $2\overline{)60}$

Mary



$$\begin{array}{rl} 12 & \\ 3\overline{)36} & \\ 30 & \text{(3 x 1 ten)} \\ \hline 6 & \\ 6 & \text{(3 x 2 ones)} \\ \hline 0 & \end{array}$$

3. There are 36 children at Mary's party. She wants them to stand in 3 lines. She wants the same number of children in each line. Look at the picture Mary drew. Is it correct? Study her division. Below is how she explained it.

$$3\overline{)36} \quad \text{means} \quad \begin{array}{l} 1 \text{ ten } 2 \text{ ones or } 12 \\ 3\overline{)3 \text{ tens } 6 \text{ ones}} \end{array}$$

   Divide and prove as Mary did.

4. $3\overline{)69}$ $2\overline{)48}$ $4\overline{)88}$ $2\overline{)64}$ $3\overline{)39}$ $4\overline{)48}$ $3\overline{)96}$
5. $2\overline{)26}$ $3\overline{)63}$ $2\overline{)28}$ $4\overline{)84}$ $3\overline{)93}$ $2\overline{)42}$ $2\overline{)62}$
6. $2\overline{)66}$ $3\overline{)99}$ $2\overline{)68}$ $2\overline{)82}$ $2\overline{)86}$ $3\overline{)33}$ $2\overline{)64}$

🟥 **Be sure to write your quotient figure in the proper place. If you get a quotient figure when you divide tens, write the quotient figure in tens place. If you get a quotient figure when you divide ones, write the quotient figure in ones place.**

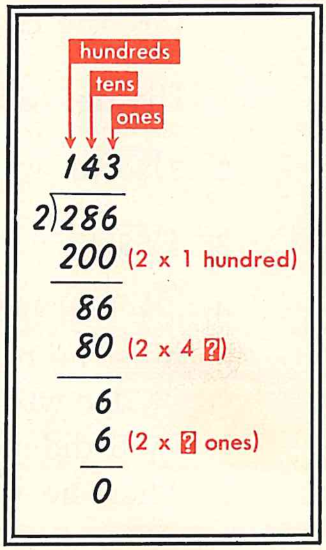
Did Mary do this in her division?

7. Ann made 286 pieces of candy. She put the candy into 2 boxes, with the same number of pieces in each box. How many pieces were there in a box?

Here is what Ann thought.

$$\begin{array}{r} ? \\ 2\overline{)286} \end{array} \quad \text{means} \quad \begin{array}{l} \quad 1 \text{ hundred } 4 \text{ tens } 3 \text{ ones or } 143 \\ 2\overline{)2 \text{ hundreds } 8 \text{ tens } 6 \text{ ones}} \end{array}$$

Here is Ann's division. →



Study Ann's division carefully. Tell what word or number belongs in place of each question mark.

Divide. Show all of your work. Put quotient figures in the proper places.

8. $2\overline{)246}$ $3\overline{)369}$ $4\overline{)484}$ $3\overline{)693}$ $2\overline{)682}$ $4\overline{)844}$

9. $3\overline{)939}$ $2\overline{)824}$ $3\overline{)699}$ $2\overline{)428}$ $2\overline{)282}$ $3\overline{)366}$

10. $2\overline{)684}$ $2\overline{)826}$ $3\overline{)633}$ $3\overline{)963}$ $2\overline{)648}$ $2\overline{)228}$

11. Bill has saved 248 trading picture cards. One half of them are colored. How many colored cards has he?

Learning More About Division

1. Jim has saved 369 pennies. He wants to spend his money for 3 presents. What can he pay for each present if each costs the same amount? Study Jim's division.

Jim

$$\begin{array}{rl} \$1.23 & \\ 3\overline{)\$3.69} & \\ 3\ 00 & (3 \times 100) \\ \hline 69 & \\ 60 & (3 \times 20) \\ \hline 9 & \\ 9 & (3 \times 3) \\ \hline 0 & \end{array}$$

■ **In dividing money, write the cents point in the quotient after the figure which means dollars. Use the dollar sign before the figure that means dollars.**

Divide. Show all your work as Jim has done.

2. $3\overline{)\$6.96}$ $3\overline{)\$9.69}$ $2\overline{)\$8.64}$ $3\overline{)\$6.93}$ $2\overline{)\$4.42}$

3. $4\overline{)\$8.48}$ $3\overline{)\$3.36}$ $2\overline{)\$8.22}$ $4\overline{)\$4.84}$ $2\overline{)\$6.42}$

4. Joe had 186 pages to read in 3 days. How many pages must he read each day to finish?

Joe wrote $3\overline{)186}$. He saw that 1 divided by 3 did not give him a quotient figure. Then he wrote his example this way:

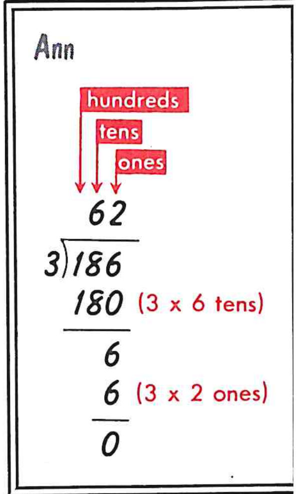
$$3\overline{)1 \text{ hundred } 8 \text{ tens } 6 \text{ ones}}$$

He thought of 1 hundred (or 10 tens) and 8 tens together. Then he could divide, like this:

$$\begin{array}{r} 6 \text{ tens } 2 \text{ ones} = 62 \\ 3\overline{)18 \text{ tens } 6 \text{ ones}} \end{array}$$

5. Explain how Ann did Joe's division problem.

Ann



$$\begin{array}{rl} 62 & \\ 3\overline{)186} & \\ 180 & (3 \times 6 \text{ tens}) \\ \hline 6 & \\ 6 & (3 \times 2 \text{ ones}) \\ \hline 0 & \end{array}$$

Divide. Show all of your work.

6. $3\overline{)276}$ $3\overline{)219}$ $3\overline{)156}$ $2\overline{)124}$ $4\overline{)124}$ $2\overline{)186}$

7. $2\overline{)146}$ $2\overline{)128}$ $3\overline{)189}$ $4\overline{)128}$ $9\overline{)189}$ $5\overline{)155}$

8. $2\overline{)102}$ $6\overline{)126}$ $8\overline{)168}$ $7\overline{)147}$ $3\overline{)279}$ $3\overline{)159}$

9. Ellen asked 16 children to a party. She wants to seat 4 children at a table. How many tables will she need? How many would she need for 12 children? For 24 children? For 36 children?

Write the facts that Ellen uses to find her answers.

Go over the facts in these tables until you know them well. Make helper cards for these facts. Study them.

Division Facts, Dividing by 4

$\begin{array}{r}1\\4\overline{)4}\end{array}$ $\begin{array}{r}2\\4\overline{)8}\end{array}$ $\begin{array}{r}3\\4\overline{)12}\end{array}$ $\begin{array}{r}4\\4\overline{)16}\end{array}$ $\begin{array}{r}5\\4\overline{)20}\end{array}$ $\begin{array}{r}6\\4\overline{)24}\end{array}$ $\begin{array}{r}7\\4\overline{)28}\end{array}$ $\begin{array}{r}8\\4\overline{)32}\end{array}$ $\begin{array}{r}9\\4\overline{)36}\end{array}$

Division Facts, Quotient 4

$\begin{array}{r}4\\1\overline{)4}\end{array}$ $\begin{array}{r}4\\2\overline{)8}\end{array}$ $\begin{array}{r}4\\3\overline{)12}\end{array}$ $\begin{array}{r}4\\4\overline{)16}\end{array}$ $\begin{array}{r}4\\5\overline{)20}\end{array}$ $\begin{array}{r}4\\6\overline{)24}\end{array}$ $\begin{array}{r}4\\7\overline{)28}\end{array}$ $\begin{array}{r}4\\8\overline{)32}\end{array}$ $\begin{array}{r}4\\9\overline{)36}\end{array}$

10. Give the missing number for each.

☐ × 4 = 12　12 ÷ 4 = ☐　☐ × 4 = 20　20 ÷ ☐ = 5
8 × ☐ = 32　32 ÷ ☐ = 8　☐ × 6 = 24　☐ ÷ 4 = 6
☐ × 4 = 16　16 ÷ ☐ = 4　7 × ☐ = 28　28 ÷ 4 = ☐

Divide. Show all of your work.

11. $4\overline{)168}$ $2\overline{)864}$ $3\overline{)129}$ $4\overline{)844}$ $4\overline{)884}$ $4\overline{)\$8.48}$

12. $4\overline{)328}$ $4\overline{)364}$ $6\overline{)186}$ $4\overline{)288}$ $3\overline{)216}$ $3\overline{)\$3.96}$

Using Five in Division

1. Say the missing number.

$\begin{array}{r} ? \\ \times 5 \\ \hline 30 \end{array}$ $\begin{array}{r} 5 \\ \times ? \\ \hline 30 \end{array}$ $\begin{array}{r} 6 \\ ?\overline{)30} \end{array}$ $\begin{array}{r} 5 \\ ?\overline{)30} \end{array}$ $\begin{array}{r} 9 \\ \times ? \\ \hline 45 \end{array}$ $\begin{array}{r} ? \\ \times 5 \\ \hline 45 \end{array}$ $\begin{array}{r} 9 \\ 5\overline{)?} \end{array}$ $\begin{array}{r} 5 \\ ?\overline{)45} \end{array}$

2. Write two multiplication and two division facts using 5, 7, 35; 3, 5, 15; 5, 4, 20; 8, 5, 40.

Make helper cards for the facts in these tables. Put all your division helper cards together. Study them as you did addition helper cards on page 40.

Division Facts, Dividing by 5

$\begin{array}{r} 1 \\ 5\overline{)5} \end{array}$ $\begin{array}{r} 2 \\ 5\overline{)10} \end{array}$ $\begin{array}{r} 3 \\ 5\overline{)15} \end{array}$ $\begin{array}{r} 4 \\ 5\overline{)20} \end{array}$ $\begin{array}{r} 5 \\ 5\overline{)25} \end{array}$ $\begin{array}{r} 6 \\ 5\overline{)30} \end{array}$ $\begin{array}{r} 7 \\ 5\overline{)35} \end{array}$ $\begin{array}{r} 8 \\ 5\overline{)40} \end{array}$ $\begin{array}{r} 9 \\ 5\overline{)45} \end{array}$

Division Facts, Quotient 5

$\begin{array}{r} 5 \\ 1\overline{)5} \end{array}$ $\begin{array}{r} 5 \\ 2\overline{)10} \end{array}$ $\begin{array}{r} 5 \\ 3\overline{)15} \end{array}$ $\begin{array}{r} 5 \\ 4\overline{)20} \end{array}$ $\begin{array}{r} 5 \\ 5\overline{)25} \end{array}$ $\begin{array}{r} 5 \\ 6\overline{)30} \end{array}$ $\begin{array}{r} 5 \\ 7\overline{)35} \end{array}$ $\begin{array}{r} 5 \\ 8\overline{)40} \end{array}$ $\begin{array}{r} 5 \\ 9\overline{)45} \end{array}$

3. John paid $3.55 for 5 pairs of socks. What did 1 pair cost?

John saw that 3 divided by 5 did not give him a quotient figure. He wrote 0 in dollars place in the quotient. Then he placed the cents point in the quotient. Then he divided 35 tens by 5. Where did he get 35 tens in this division? Explain the rest of his division.

John

hundreds

tens

ones

$$\begin{array}{rl} \$0.71 & \\ 5\overline{)\$3.55} & \\ 3\ 50 & (5 \times 7 \text{ tens}) \\ \hline 5 & \\ 5 & (5 \times 1 \text{ one}) \\ \hline 0 & \end{array}$$

Dividing Things into Fourths and Fifths

1. On page 109 you studied about $\frac{1}{4}$ of a group of things. Read page 109. The first time you studied that page you did not know how to divide by 4. If you had, you could have thought:

$$\begin{array}{r}5\\4\overline{)20}\end{array}\qquad\begin{array}{r}2\\4\overline{)8}\end{array}\qquad\begin{array}{r}3\\4\overline{)12}\end{array}$$

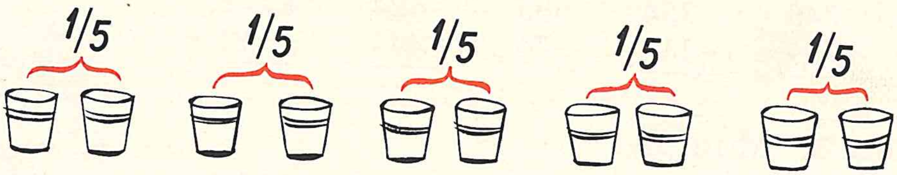
■ **To find $\frac{1}{4}$ of a number, divide the number by 4.**

2. Find $\frac{1}{4}$ of each of these numbers:

12 32 20 28 8 16 24 36

3. The vegetable man had 24 cucumbers. Mrs. Smith bought $\frac{1}{4}$ of them. How many did she buy?

4. Ann made 10 glasses of lemonade. Jack drank $\frac{1}{5}$ of this lemonade. How many glasses did he drink?



5. When you divide a number of things by 5, how many equal groups do you get? What is one of the equal groups called?

■ **To find $\frac{1}{5}$ of a number of things, divide the number by 5.**

6. Say or write the answers:

$\frac{1}{4}$ of 24 $\frac{1}{5}$ of 40 $\frac{1}{4}$ of 36 $\frac{1}{4}$ of 32 $\frac{1}{5}$ of \$5.55

$\frac{1}{4}$ of 16 $\frac{1}{5}$ of 35 $\frac{1}{5}$ of 45 $\frac{1}{4}$ of 124 $\frac{1}{5}$ of \$2.55

Watch the Signs as You Race

Race 1. Write the sums. If you want to be sure you are right, check each answer.

1.	7	45	42	19	$2.17
	4	36	8	216	.69
	7	58	53	28	1.12
	+5	+29	+4	+34	+4.17

2.	3	69	77	149	$4.34
	8	32	34	62	2.77
	5	48	9	338	.60
	+4	+71	+0	+20	+4.14

Race 2. Find the differences and check.

1.	824	433	625	347	$5.10
	−319	−8	−20	−250	−3.75

2.	748	354	585	624	$3.48
	−729	−117	−76	−444	−.85

Race 3. Multiply.

1.	28	243	154	326	$1.74
	×3	×4	×4	×3	×3

2.	31	23	21	392	$2.75
	×6	×5	×8	×2	×3

Race 4. Divide.

1. $4\overline{)368}$ $3\overline{)936}$ $7\overline{)287}$ $5\overline{)405}$ $5\overline{)\$1.55}$

2. $2\overline{)146}$ $4\overline{)288}$ $9\overline{)459}$ $6\overline{)306}$ $4\overline{)\$8.44}$

Reviewing Division

A $\boxed{?}$ 2's = 18 **B** $\begin{array}{r}\boxed{?}\\ 2\overline{)18}\end{array}$ **C** $18 \div 2 = \boxed{?}$

Pictures A, B, and C show different ways to write a division question. Write each of these division questions in three different ways. Write the quotient in the proper place.

1. $\boxed{?}$ 5's = 45 $36 \div 4 = \boxed{?}$ $\begin{array}{r}\boxed{?}\\ 3\overline{)27}\end{array}$ $24 \div 8 = \boxed{?}$

2. $\begin{array}{r}\boxed{?}\\ 7\overline{)28}\end{array}$ $\boxed{?}$ 6's = 30 $\begin{array}{r}\boxed{?}\\ 8\overline{)32}\end{array}$ $\boxed{?}$ 3's = 21

Copy. Find the answers.

3. $\frac{1}{5}$ of 45 $3\overline{)129}$ $369 \div 9$ $3\overline{)\$3.63}$

4. $4\overline{)324}$ $\frac{1}{2}$ of 264 $\frac{1}{3}$ of 183 $5\overline{)\$4.05}$

5. $484 \div 4$ $355 \div 5$ $\frac{1}{4}$ of 164 $3\overline{)\$3.96}$

6. $3\overline{)963}$ $4\overline{)128}$ $246 \div 3$ $5\overline{)\$2.55}$

7. $\frac{1}{4}$ of 248 $\frac{1}{5}$ of 40 $4\overline{)328}$ $2\overline{)\$1.84}$

8. $2\overline{)686}$ $273 \div 3$ $5\overline{)255}$ $4\overline{)\$4.48}$

9. $\frac{1}{2}$ of 86 $\frac{1}{3}$ of 27 $639 \div 3$ $2\overline{)\$8.62}$

10. $996 \div 3$ $4\overline{)288}$ $\frac{1}{4}$ of 368 $3\overline{)\$1.59}$

11. Mrs. Smith paid $8.48 for 4 dresses. If all dresses cost the same, what did each dress cost?

12. Ann broke one third of her toy dishes. If she had 120 dishes in her whole set, how many were broken?

How Well Have You Learned?

1. Write the missing numbers for each row.

Row A: 2, 4, ☐, 8, 10, ☐, ☐, ☐, ☐. (228)
Row B: 4, 8, 12, ☐, ☐, ☐, ☐, 32, ☐. (239)
Row C: 3, 6, ☐, ☐, ☐, 18, ☐, ☐, ☐. (231)

2. Write a multiplication pair and a division pair for each group of three numbers: (288)

3, 4, 12   5, 8, 40   9, 4, 36   4, 7, 28

Write the quotients.

3. $7\overline{)14}$ $2\overline{)16}$ $6\overline{)12}$ $9\overline{)18}$ $5\overline{)10}$ $8\overline{)16}$ $2\overline{)8}$ (280)

4. $3\overline{)21}$ $5\overline{)15}$ $6\overline{)18}$ $3\overline{)24}$ $3\overline{)27}$ $8\overline{)24}$ $4\overline{)12}$ (282)

5. $8\overline{)32}$ $4\overline{)20}$ $6\overline{)24}$ $4\overline{)28}$ $9\overline{)36}$ $4\overline{)16}$ $4\overline{)36}$ (287)

6. $8\overline{)40}$ $5\overline{)25}$ $5\overline{)20}$ $7\overline{)35}$ $5\overline{)45}$ $6\overline{)30}$ $5\overline{)40}$ (288)

7. Divide. (284–286)

$2\overline{)68}$ $3\overline{)96}$ $4\overline{)844}$ $5\overline{)455}$ $9\overline{)369}$ $7\overline{)217}$ $3\overline{)183}$

8. Divide. (286, 288)

$5\overline{)\$5.55}$ $5\overline{)\$1.55}$ $3\overline{)\$9.36}$ $4\overline{)\$1.24}$ $3\overline{)\$2.49}$

9. $\frac{1}{4}$ of 48 = ☐ $\frac{1}{5}$ of 255 = ☐ $\frac{1}{2}$ of \$1.24 = ☐ (279, 281, 289)

Draw pictures to answer these questions.

10. Draw 24 dots. Cross out $\frac{1}{3}$ of them. (281)

11. Draw 20 stars. Show them in 4 equal groups. (277)

12. Draw a number line. Show that 32 ÷ 4 = 8. (255)

Helping Yourself

Put all of your multiplication helper cards together. Work with one or more friends. Practice giving products. Pages 41 and 42 show you helpful games.

Write products on folded paper. Work quickly.

1.	5 ×9	7 ×5	4 ×9	8 ×4	9 ×3	2 ×8	1 ×5	8 ×3
2.	6 ×4	3 ×7	8 ×5	7 ×4	3 ×6	9 ×4	4 ×8	3 ×4

3. Put all your division helper cards together. Make a stack of all the divisions with a quotient of 4. Have someone see if you can say all of them. Then do the same for facts with a quotient of 2; 3; 5.

4. Work with a partner. Write the answers to the exercises on page 321 in the back of your book. See who can finish first and have the answers correct. Do the same for exercises A through E on page 323.

5. Use addition. Show that 6 × 4 = 24. (206)

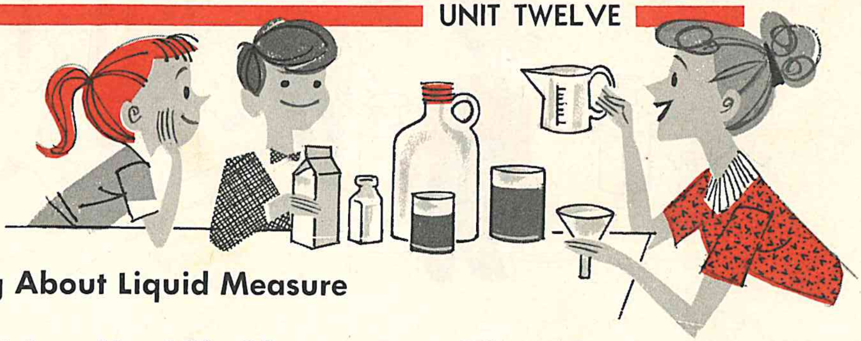
6. Use subtraction. Show that 36 ÷ 9 = 4. (255)

Use folded paper. Divide.

7.	$4\overline{)480}$	$3\overline{)639}$	$5\overline{)250}$	$2\overline{)120}$	$3\overline{)189}$	$5\overline{)\$4.55}$
8.	$6\overline{)186}$	$9\overline{)369}$	$7\overline{)287}$	$8\overline{)328}$	$1\overline{)147}$	$3\overline{)\$2.19}$
9.	$6\overline{)246}$	$7\overline{)210}$	$4\overline{)848}$	$5\overline{)455}$	$3\overline{)276}$	$4\overline{)\$2.88}$

How Well Are You Doing?

1. Four pounds of cheese cost $3.20. What does 1 pound of cheese cost?
2. Mother made 48 cookies. One fourth of them were small. How many small cookies did she make?
3. Ann made cookies, too. She put 9 cookies in a row on the baking pan. She made 5 rows. How many cookies was this?
4. Sue got 48 rolls ready to bake. She put 6 rolls in each baking pan. How many pans did she use?
5. Which would you rather have: one half of $2.44, or one third of $3.66?
6. Tom is putting canned goods on a shelf for the grocer. He carries 4 cans on each trip to the shelf. How many trips must he make to carry 36 cans?
7. Father drove 450 miles in 9 hours. How far will he go in one hour at this rate?
8. Jim had 45¢. He spent $\frac{1}{5}$ of it for candy. What did the candy cost?
9. Jack paid $1.24 for 4 tubes of tooth paste. What did 1 tube cost?
10. There are 360 eggs in a full case of eggs. The grocer said he sold $\frac{1}{4}$ of a case of eggs. How many eggs did he sell?



Learning About Liquid Measure

1. What is a liquid? Name several liquids.
2. The children brought all these measures to school. Name the measures they brought.
3. In which of these measures is milk often sold? Orange juice? Ice cream?
4. Use water. Fill a pint bottle. Pour the water into the measuring cup. How many times can you fill the cup? How many cupfuls equal 1 pint?
5. Use the pint bottle. Fill the quart bottle with water. How many pints equal 1 quart?
6. Use the quart bottle. Fill the gallon jug. How many quarts does the gallon jug hold?

■ **2 cupfuls equal 1 pint (pt.)**
2 pints (pt.) equal 1 quart (qt.)
4 quarts (qt.) equal 1 gallon (gal.)

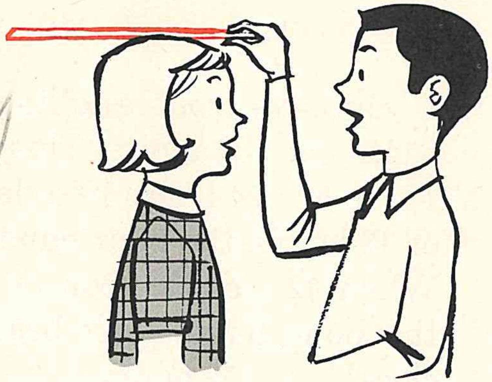
■ **A pint is one half of a quart; a quart is one fourth of a gallon.**

7. Draw a picture. Show how a pint of chocolate milk would look if poured into a quart milk bottle.
8. Draw a picture. Show how a quart of orange juice would look if poured into the gallon jug.

Using Measures on a Dairy Farm

Edward visited Mr. West. Mr. West owns several cows. He milks them and sells the milk in a little town near by. He let Edward help him. In helping, Edward had to use pints, quarts, and gallons that he had learned about in school.

1. Mr. West puts his milk into cans that hold 5 gallons each. How many quart bottles can he fill from a can full of milk?
2. Mrs. West gave Edward a gallon jug. She asked him to bring about 2 quarts of milk to the house. How full should he fill the jug to have about 2 quarts in it?
3. One day Mr. West delivered 482 quarts of milk. How many pints would this make?
4. The next day Mr. West sold 200 gallons of milk. How many quarts would this make?
5. Mr. West had 846 bottles to wash. Edward washed half of them. How many did Edward wash?
6. Edward drank 2 cupfuls of milk for breakfast. Did he drink 1 quart or 1 pint of milk?
7. $\frac{1}{4}$ gal. = ? qt. $\frac{1}{2}$ qt. = ? pt. $\frac{1}{2}$ pt. = ? cupfuls



Let's Know Our Ruler Better

1. Lay your foot ruler on a sheet of paper. Play it is a number line. Make marks on the paper to show the ruler divided into 3 equal parts. Each part is what part of the whole ruler?
2. Count the number of inches in each part. How many inches are there in $\frac{1}{3}$ of 12 inches, or 1 foot?
3. Move your ruler. Make marks to show it divided into halves. How many inches in $\frac{1}{2}$ foot? Show $\frac{1}{4}$ of a foot. How many inches equal $\frac{1}{4}$ ft.?
4. Very often a foot ruler is not long enough to measure well. Then you can use the yardstick. How many inches equal 1 yard?
5. Use the yardstick. Measure 2 yards along the wall. Measure 10 yards.
6. How many feet equal 1 yard?
7. Name some things bought by the yard.

■ **You can use the foot ruler and the yardstick to find how long, how wide, or how deep things are.**

12 inches (in.) equal 1 foot (ft.)
3 feet (ft.) or 36 inches (in.) equal 1 yard (yd.)

Around the Clock with the Hour Hand

1. If you have trouble telling time, study pages 136–139 again. This will help you.
2. There are 24 hours in a day. In $\frac{1}{2}$ day, or 12 hours, the hour hand goes around the clock once. When 12 o'clock noon or 12 o'clock midnight comes, the hour hand must begin another trip around the clock:

$$\begin{array}{r} 12 \text{ hours} \\ 2\overline{)24} \text{ hours} \end{array}$$

3. Tell how long it takes the hour hand to go:

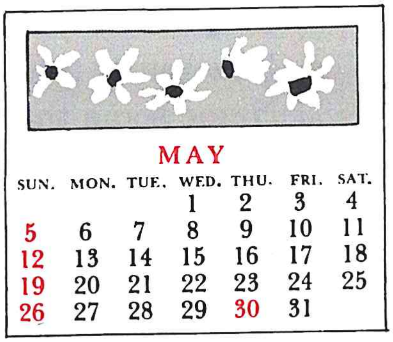
   From 12 to 5 From 6 to 9 From 10 to 3
   From 2 to 9 From 5 to 8 From 11 to 4

4. Tell how long it takes the minute hand to go:

   From 3 to 6 From 4 to 9 From 9 to 1
   From 3 to 9 From 2 to 8 From 11 to 2

5. A child should sleep one half of the day until he is 4 years old. How many hours a day is this?
6. How many days are in a week? How many hours are in a week?
7. A grown person should sleep one third of the day. How many hours a day is this?

■ **60 minutes (min.) = 1 hour (hr.)**
24 hours (hr.) = 1 day (da.)
7 days (da.) = 1 week (wk.)



MAY

SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Dividing Does Not Always Come Out Even

Tom

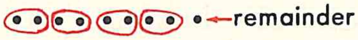
$$\begin{array}{r} 2,\ r\ 1 \\ 2\overline{)5} \\ 4 \\ \hline 1 \end{array}$$

1. Tom had 5 candy kisses. He put them in groups of 2's. How many groups were there? How many kisses were left over?
2. Study pages 22 and 23. They can help you here.

■ **The number that is left over in a division is called the remainder.**

3. What did Tom use in his example to show the remainder?

Draw dots. Show these divisions with remainders, as:

$2\overline{)9} =$ 

4. $\begin{array}{r} 4,\ r\ 1 \\ 2\overline{)9} \\ 8 \\ \hline 1 \end{array}$ $\quad$ $\begin{array}{r} 3,\ r\ 1 \\ 2\overline{)7} \\ 6 \\ \hline 1 \end{array}$ $\quad$ $\begin{array}{r} 6,\ r\ 1 \\ 2\overline{)13} \\ 12 \\ \hline 1 \end{array}$ $\quad$ $\begin{array}{r} 8,\ r\ 1 \\ 2\overline{)17} \\ 16 \\ \hline 1 \end{array}$

Draw dots. Show these divisions. Then do the dividing. Show all your work.

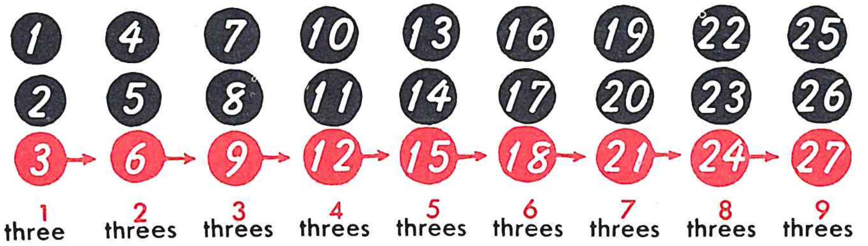
5. $2\overline{)15}$ $\quad 2\overline{)11}$ $\quad 2\overline{)3}$ $\quad 2\overline{)19}$

Jack

$$\begin{array}{rl} 21,\ r\ 1 & \\ 2\overline{)43} & \\ 40 & (2 \times 2 \text{ tens}) \\ \hline 3 & \\ 2 & (2 \times 1 \text{ one}) \\ \hline 1 & \end{array}$$

Study Jack's division. Then find the quotients and remainders for these divisions. Show all of your work.

6. $2\overline{)43}$ $\quad 2\overline{)67}$ $\quad 2\overline{)29}$ $\quad 2\overline{)83}$
7. $2\overline{)247}$ $\quad 2\overline{)683}$ $\quad 2\overline{)825}$ $\quad 2\overline{)649}$ $\quad 2\overline{)249}$ $\quad 2\overline{)463}$



Dividing by 3 When There Is a Remainder

1. How many 3's equal 15? Find 15 on the chart. The chart shows there are exactly 5 threes in 15.
2. How many 3's are there in 26? Find 26 on the chart. Does it contain 3 an exact number of times? Go back to the nearest number having an exact number of 3's. What number is this? How many 3's are there in this number? Think: "But 26 is 2 more than 24. There is a remainder of 2. Then in 26 there are 8 threes and a remainder of 2." See the division in B.
3. Keep the numbers in the red circles in mind. Give the quotient and remainder for these numbers when divided by 3:

A

$$\begin{array}{r} 5 \\ 3\overline{)15} \\ 15 \\ \hline 0 \end{array}$$

B

$$\begin{array}{r} 8,\ r\ 2 \\ 3\overline{)26} \\ 24 \\ \hline 2 \end{array}$$

C

$$\begin{array}{r} 132,\ r\ 2 \\ 3\overline{)398} \\ 300 \\ \hline 98 \\ 90 \\ \hline 8 \\ 6 \\ \hline 2 \end{array}$$

15	26	14	5	22	8	28	3	19
20	10	9	16	13	24	4	18	11
25	6	21	17	23	7	27	29	28

Study the division in C. Divide. Show all work.

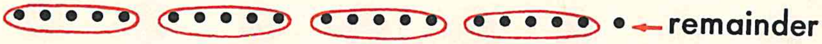
4. $3\overline{)398}$ $3\overline{)634}$ $3\overline{)157}$ $3\overline{)245}$ $3\overline{)967}$ $3\overline{)365}$

Dividing by 4 When There Is a Remainder

John

$$\begin{array}{r} 5,\ r\,1 \\ 4\overline{)21} \\ 20 \\ \hline 1 \end{array}$$

1. John had 21 pencils. He divided them as equally as he could among 4 friends. How many pencils did he give each friend? How many pencils were left over? Explain John's division and this picture check.



The numbers in the red circles can be divided equally by 4. Think of them as you divide the other numbers.

4	8	12	16	20	24	28	32	36
5	9	13	17	21	25	29	33	37
6	10	14	18	22	26	30	34	38
7	11	15	19	23	27	31	35	39

2. Divide 23 by 4. What number in the red circles must you think? What number will you write in your quotient? What will be your remainder?

Divide. Say the quotient and the remainder.

3. $4\overline{)34}$ $4\overline{)26}$ $4\overline{)15}$ $4\overline{)33}$ $4\overline{)31}$ $4\overline{)11}$

4. $4\overline{)14}$ $4\overline{)22}$ $4\overline{)6}$ $4\overline{)21}$ $4\overline{)38}$ $4\overline{)9}$

5. $4\overline{)10}$ $4\overline{)19}$ $4\overline{)25}$ $4\overline{)35}$ $4\overline{)18}$ $4\overline{)27}$

6. Sue had 15 pieces of candy. If she divides them equally among 4 children, how many pieces will each child get? How many pieces will be left?

Dividing by 5 When There Is a Remainder

1. Joe has 28¢. How many ice cream cones at 5¢ each can he buy?

   To divide 28 by 5, go back to 25. How many 5's are there in 25? Look at the chart below. You can see that 28 is 3 more than 25. How much will the remainder be when you divide 28 by 5?

5	10	15	20	25	30	35	40	45
6	11	16	21	26	31	36	41	46
7	12	17	22	27	32	37	42	47
8	13	18	23	28	33	38	43	48
9	14	19	24	29	34	39	44	49

2. Tell how many ice cream cones you could get if you had these amounts of money. A cone costs 5¢.

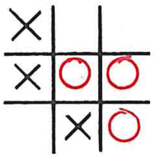
   37¢ 43¢ 23¢ 47¢ 18¢ 44¢ 36¢

   11¢ 29¢ 46¢ 34¢ 17¢ 31¢ 49¢

3. When Jack keeps score he shows 5 points in this way: 𝍸. How would he show 6 points? 10 points?

4. Jack and Don played "Tic Tac Toe." Read these scores that Jack kept. How many games did each boy win?

Jack	Don
𝍸 ||||	𝍸 𝍸 𝍸 ||||



5. Use strokes as Jack did. Show scores of:

   32 points 49 points 24 points 14 points

Do You Pay Attention to Signs?

Read and say the answers.

1.	$3 + 4$	$7 - 2$	5×6	$32 \div 4$
2.	$7 + 6$	$13 - 5$	7×4	$24 \div 8$
3.	$9 + 2$	$11 - 3$	4×9	$21 \div 3$
4.	$3 + 5$	$8 - 4$	6×2	$28 \div 7$
5.	$8 + 7$	$15 - 6$	8×3	$45 \div 9$
6.	$3 + 7$	$10 - 6$	3×9	$18 \div 6$
7.	$6 + 9$	$15 - 8$	2×6	$27 \div 3$
8.	$8 + 5$	$13 - 6$	7×3	$40 \div 8$
9.	$5 + 9$	$14 - 8$	9×5	$12 \div 6$
10.	$1 + 7$	$8 - 3$	6×3	$32 \div 8$
11.	$9 + 8$	$17 - 8$	9×3	$0 \div 4$
12.	$2 + 7$	$9 - 5$	8×4	$35 \div 7$
13.	$8 + 3$	$11 - 5$	5×8	$30 \div 6$
14.	$0 + 8$	$8 - 0$	0×4	$24 \div 6$
15.	$3 + 9$	$12 - 5$	4×8	$36 \div 9$
16.	$5 + 7$	$17 - 9$	3×8	$18 \div 3$
17.	$7 + 8$	$11 - 4$	4×7	$28 \div 4$
18.	$9 + 4$	$15 - 7$	5×9	$24 \div 3$
19.	$6 + 3$	$11 - 5$	4×6	$18 \div 2$
20.	$4 + 8$	$14 - 9$	9×4	$40 \div 5$

Important Things You Have Learned This Year

If you know these things well, you are ready for the next grade. If you need help, study the pages whose numbers are printed in red.

1. Reading and writing numbers (26, 27, 149, 175–178).

Write in words: 67 540 604 4,152 5,002

Write in figures: nine hundred four, six thousand four hundred eighty, one thousand six.

2. Reading and writing Roman numerals (140).

Write in words:

III VI IX XII I V X IV XI VIII

Write in Roman numerals: 1 5 9 4 10 11 12 3

3. The 100 simple addition facts (88, 315).

8	6	4	7	3	9	5	4	9	8
+7	+5	+9	+6	+8	+7	+8	+6	+5	+5

4. Adding by endings (126, 127). Write the answers.

17 + 6 27 + 6 57 + 6 77 + 6

5. Column addition (99, 101, 103, 128, 158–159, 184–185).

Add. Check by adding in the opposite direction.

6	9	7	38	9	430	67
4	3	4	57	54	359	118
8	8	0	32	65	627	9
+7	+3	+9	+43	+7	+153	+32

6. Addition without carrying (91, 93), and with carrying (116, 142, 164, 165, 183).

76	584	638	258	720	765	648
+34	+240	+253	+9	+240	+193	+275

7. The 100 simple subtraction facts (89, 318).

$$\begin{array}{r} 9 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ -9 \\ \hline \end{array} \quad \begin{array}{r} 14 \\ -8 \\ \hline \end{array} \quad \begin{array}{r} 15 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 18 \\ -9 \\ \hline \end{array} \quad \begin{array}{r} 17 \\ -8 \\ \hline \end{array} \quad \begin{array}{r} 16 \\ -7 \\ \hline \end{array}$$

8. Subtraction without (91, 92) and with borrowing (118–120, 162, 168, 170).

$$\begin{array}{r} 76 \\ -34 \\ \hline \end{array} \quad \begin{array}{r} 584 \\ -340 \\ \hline \end{array} \quad \begin{array}{r} 635 \\ -255 \\ \hline \end{array} \quad \begin{array}{r} 258 \\ -9 \\ \hline \end{array} \quad \begin{array}{r} 728 \\ -643 \\ \hline \end{array} \quad \begin{array}{r} 765 \\ -398 \\ \hline \end{array} \quad \begin{array}{r} 641 \\ -274 \\ \hline \end{array}$$

9. Copying numbers neatly in straight columns (101, 128, 133, 135).

Copy and add: 432, 67, 190, 17, 3

Copy and subtract: 59 from 436

10. The multiplication facts for 0, 1, 2, 3, 4, and 5 (228–229, 233, 240, 244, 320). Say products:

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ \times 7 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 0 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 1 \\ \times 9 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$$

11. Some "times-and" facts (241). Say answers:

$3 \times 6 + 2 \qquad 4 \times 5 + 1 \qquad 6 \times 2 + 5 \qquad 8 \times 1 + 1$

12. Multiplication without carrying (231, 233, 236) and with carrying (237, 240, 245–246). Write the products.

$$\begin{array}{r} 23 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 76 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 312 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 329 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 162 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 178 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 479 \\ \times 3 \\ \hline \end{array}$$

13. Division facts for 1, 2, 3, 4, and 5 (280, 282, 287–288, 322). Write the quotients.

$$3\overline{)27} \qquad 4\overline{)32} \qquad 5\overline{)45} \qquad 4\overline{)28} \qquad 3\overline{)18}$$

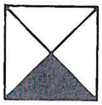
14. Division when there is no remainder (262–263, 285).

$3\overline{)69}$ $4\overline{)48}$ $2\overline{)146}$ $5\overline{)250}$ $3\overline{)189}$

15. Remainders in division (299–302).

$5\overline{)27}$ $2\overline{)43}$ $3\overline{)394}$ $4\overline{)167}$ $5\overline{)256}$ $4\overline{)489}$

16. Equal parts of 1 whole (104–105, 275). Draw a line. Mark it into halves. What part of each of these squares is colored?

A


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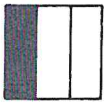
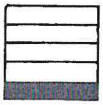
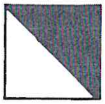


17. An equal part of a group of things (109, 276–279, 281, 289). Find the answers.

$\frac{1}{2}$ of 18 $\frac{1}{4}$ of 36 $\frac{1}{3}$ of 24 $\frac{1}{5}$ of 35

C


D


18. How to tell time by the calendar and the clock (20, 136–139, 298). What month is this? How many days in a week? What time is it? How many hours in a day? How many minutes in an hour?

19. How to measure length, width, how high, or how deep (147, 148, 295). How many inches in a foot? How many feet in a yard? How many inches in a yard?

20. Liquid measure (296–297). How many pints in a quart? How many quarts in a gallon? Name five things sold by liquid measure.

21. The use of dollars and cents. Find the answers.

(153–154)	(155)	(234, 247–248)	(286, 288)
\$4.12 .89 2.25 +.76	\$7.55 −2.85	\$1.48 ×5	$4\overline{)\$1.68}$

Try to Do Your Very Best

Write the sums.

1.	7	9	28	33	468	597	569	400
	+6	+44	+9	+74	+321	+406	+287	+501

2.	7	5	56	39	4	84	246	285
	4	9	26	45	13	137	106	8
	8	3	45	7	3	9	210	84
	+6	+0	+30	+5	+22	+95	+342	+6

Write the differences.

3.	9	17	28	45	79	485	774	526
	−7	−8	−12	−35	−50	−257	−183	−268

Write the products.

4.	9	7	21	60	404	342	126	360
	×2	×5	×8	×4	×6	×2	×5	×2

Write the quotients.

5. $3\overline{)96}$ $4\overline{)124}$ $5\overline{)250}$ $3\overline{)159}$ $2\overline{)846}$

6. Find $\frac{1}{3}$ of each of these numbers:
24 69 120 156 189 216 936

7. Find $\frac{1}{4}$ of each of these numbers:
24 84 120 168 484 804 400

8. Find $\frac{1}{5}$ of each of these numbers:
15 35 150 255 505 500 450

9.	$4.52	$5.50	$1.25	$4\overline{)\$8.80}$
	+3.48	−2.45	×3	

10. Add 23, 146, 43, and 8.

Know When to Add and When to Subtract

1. Study page 30. When a problem asks you to find how many there are in all, one way to find the answer is to add.

   That is, you put together the amounts given in the problem and find how many there are in the new group.

🟥 **Your answer in addition is larger than any of the amounts you added, unless you add 0 only.**

2. Jim has 15 cowboy trading cards. Joe has 24 baseball trading cards. In all Jim and Joe have how many trading cards?

   What words in the problem ask you to add?

   Jim's answer to this problem was 11. Joe's was 9. Mary got 39 for her answer. Which two answers could not be right? How do you know even before you add?

3. Study pages 58, 188–190. When you subtract, you compare, or find the difference between two numbers. You also subtract to find how many are left.

   Subtraction problems ask questions like:

   How many more? How many less? What is the difference? How many are left?

🟥 **Your answer in subtraction will be smaller than the number from which you subtracted, unless you subtract 0 only.**

4. A dealer can park 24 new cars on his parking lot. He now has 13 cars on the lot. How many more can he park there?

What words in the problem ask you to subtract?

Jane's answer to this problem was 36. Bill's answer was 11. Which answer could not be right? How do you know even before you subtract?

Read each problem below carefully. To find the answer, must you add or subtract? Write the number question for the problem. Then find the answer.

5. There were 35 children in Ann's class. There were 28 children in Bob's class. Both classes went together to see a television show. How many children were at the show?
6. There are 24 girls in Ann's class. There are 14 girls in Bill's class. Ann's class has how many more girls than Bill's class?
7. Tom has $4.15 saved. He wants to buy a magic set costing $7.50. How much more does he need to buy the set?
8. For Mary's birthday she got $3.50 from her mother and $4.25 from her father. Mary wanted a puppet which cost $7.75. Did she have enough money to buy the puppet?
9. Tom earned $7.75. He bought skates costing $5.50. How much of his money did he have left?
10. Mrs. Smith spent $3.60 at the drug store, $2.59 at a flower shop, and paid $1.25 to have her shoes repaired. How much did she spend in all?

Know When to Multiply and When to Divide

1. Study page 227. Some problems tell you how many things there are in 1 group. Then you are asked to find how many are in more than one of these groups.

■ **To find how many in all the equal groups, multiply.**

For each problem from 2 through 5, tell how many there are in 1 of the equal groups. Then tell how many equal groups there are. Find the answer.

2. Each team has 11 players. How many players will there be on 2 teams? 5 teams? 3 teams?
3. Tom has 32 marbles in each bag. How many marbles has he if he has 5 such bags? 7 bags?
4. There are 12 crayons in a box. How many are there in 4 boxes? 7 boxes? 9 boxes?
5. One book costs $1.21. What will 5 books cost?
6. Some problems give the total amount. They give the number of equal groups. You must find how many things in 1 equal group. Study pages 282–283.

■ **To find how many in 1 equal group, divide the total amount by the number of equal groups.**

In problems 7 through 9 tell what number is the total amount. Tell how many equal groups there are. Divide and find the answer.

7. Four boys are camping. They have 12 eggs to be divided equally among them. How many eggs will each boy get?

8. There are 44 children to be divided into 4 equal teams. How many will be on each team?

9. Five children bought a box of 150 greeting cards. How many cards will each child sell, if each sells his share?

10. Some problems tell you the total amount. They also tell you how many there are in one of the equal groups. The problem asks you to find how many equal groups there are. (Study pages 255 and 256.)

🟥 **To find how many equal groups, divide the total by the number of things in 1 equal group.**

In problems 11 through 16, tell what number is the total amount. Tell how many there are in 1 equal group. Divide and find the answer.

11. Tom had a board 15 feet long. He cut it into pieces that were 5 feet long. How many pieces did he cut?

12. Jane wants to put 3 candy bars into each bag. If she has 27 candy bars, how many bags does she need?

13. Mother has 15 yards of cloth. If she uses 3 yards for each curtain, how many curtains can she make from this cloth?

14. Mother took 3 hours to finish a curtain. How many curtains can she finish in 15 hours?

15. If 5 boys ride in each car, how many cars will be needed to take 35 boys to a ball game?

16. Sue wants to weave 36 mats to sell. If she weaves 3 mats in one week, how many weeks will it take her to finish all of the mats?

Must You Add, Subtract, Multiply, or Divide?

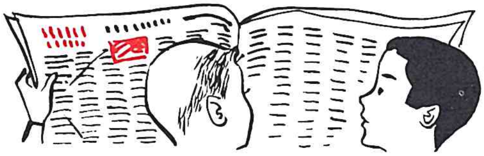
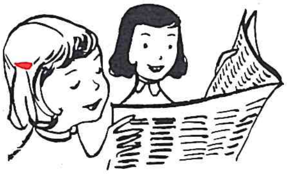
1. Study and solve the problems on pages 212, 218, 221, 260, 268, and 269.

Write the number question for each of the following problems. Then find the answer.

2. Rickey drove 312 miles on Friday, 298 miles on Saturday, and 87 miles on Sunday. How many miles did he drive in the three days?
3. Carl earns $1.85 an hour. How much will he earn in 5 hours?
4. Dan had 126 marbles. He gave $\frac{1}{3}$ of them away. How many did he give away?
5. Ellen pasted 120 pictures on 4 pages in her scrapbook. If she put the same number of pictures on each page, how many did she put on a page?
6. Henry read 23 pages a day for 7 days. How many pages did he read in that time?
7. Jack weighs 12 pounds more than Jimmy. If Jack weighs 88 pounds, what does Jimmy weigh?
8. Kathy is reading a library book that has 344 pages in it. She has read 186 pages. How many pages has she left to read?
9. Ann divided 126 pieces of paper equally among 6 children. How many pieces did she give each child?
10. Joe is reading a 270-page book. If he reads 9 pages a day, how long will it take to finish the book?
11. Jerry is putting 42 picture postcards on the bulletin

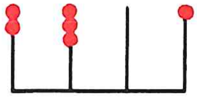
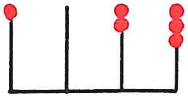
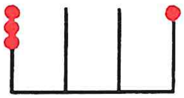
board. If he puts 6 cards in a row, how many rows will there be?

12. There are 35 children in Joan's classroom. Today 29 of these children came to school. How many were absent?
13. Sue needs 14 pins to pin up 1 curtain. How many pins will she need to pin up 6 such curtains?
14. Two classes made a trip to the airport. There were 28 children in one class and 33 in the other. How many children went on the trip?
15. The teacher divided 32 children into 4 equal groups. How many children did she put in a group?
16. Mrs. Brown bought 6 loaves of bread. The baker cut each loaf into 14 slices. How many slices were there in the 6 loaves?
17. Mr. Jones had to have his TV set repaired. The repairman charged $2.75 an hour for his work. If he worked 3 hours, how much did Mr. Jones have to pay?
18. Jack's father paid $2.50 for grass seed, $3.95 for lawn fertilizer, and $9.50 to the man who did the work on the lawn. How much did Jack's father pay in all?
19. There were 24 window screens to be cleaned. Three children shared the work equally. How many screens did each child clean?
20. Jack spends 2 hours every night watering the lawn. In one week this will make how many hours?
21. Do the problems on page 174. Write the number question first. Then find the answer.

Reading Numbers

1. Here are some sentences from a newspaper. Read them. Say all the numbers correctly.
   There were 9,325 people at the ball game.
   The ball park has only 9,000 seats.
   They sold 8,958 tickets.
   Yesterday only 5,892 people came to see the game.
2. Show these numbers on a place-value frame.
   605 3253 72 150 7001
3. What number is shown on each abacus below:

4. Which of these numbers are close to being one thousand? There are 2 such numbers here:
   999 597 1900 3004 1002 427
5. Read each number. How many hundreds are there in hundreds place? How many tens in tens place? How many ones in ones place?
   4,830 4,803 4,083 4,800 4,080 4,003
6. Read these numbers:
   6,470 6,407 6,047 6,400 6,040 6,007
   9,260 9,206 9,026 9,200 9,020 9,006
   1,467 4,254 7,937 2,168 5,537 6,214
   469 2,162 3,043 988 2,133 4,070

One Hundred Addition Facts

0 +0 0	0 +1 1	0 +2 2	0 +3 3	0 +4 4	0 +5 5	0 +6 6	0 +7 7	0 +8 8	0 +9 9
1 +0 1	1 +1 2	1 +2 3	1 +3 4	1 +4 5	1 +5 6	1 +6 7	1 +7 8	1 +8 9	1 +9 10
2 +0 2	2 +1 3	2 +2 4	2 +3 5	2 +4 6	2 +5 7	2 +6 8	2 +7 9	2 +8 10	2 +9 11
3 +0 3	3 +1 4	3 +2 5	3 +3 6	3 +4 7	3 +5 8	3 +6 9	3 +7 10	3 +8 11	3 +9 12
4 +0 4	4 +1 5	4 +2 6	4 +3 7	4 +4 8	4 +5 9	4 +6 10	4 +7 11	4 +8 12	4 +9 13
5 +0 5	5 +1 6	5 +2 7	5 +3 8	5 +4 9	5 +5 10	5 +6 11	5 +7 12	5 +8 13	5 +9 14
6 +0 6	6 +1 7	6 +2 8	6 +3 9	6 +4 10	6 +5 11	6 +6 12	6 +7 13	6 +8 14	6 +9 15
7 +0 7	7 +1 8	7 +2 9	7 +3 10	7 +4 11	7 +5 12	7 +6 13	7 +7 14	7 +8 15	7 +9 16
8 +0 8	8 +1 9	8 +2 10	8 +3 11	8 +4 12	8 +5 13	8 +6 14	8 +7 15	8 +8 16	8 +9 17
9 +0 9	9 +1 10	9 +2 11	9 +3 12	9 +4 13	9 +5 14	9 +6 15	9 +7 16	9 +8 17	9 +9 18

Special Practice Exercises—Addition

A (86)	8	9	9	5	7	4	5	9	8	6
	+5	+8	+6	+7	+4	+9	+6	+9	+6	+4
	7	8	3	6	8	6	2	6	8	5
	+7	+3	+9	+7	+9	+8	+9	+5	+4	+8
	8	9	9	8	9	5	7	4	9	4
	+7	+5	+2	+8	+4	+9	+6	+8	+7	+7
	7	9	3	7	5	2	7	6	6	3
	+9	+3	+7	+8	+5	+8	+5	+6	+9	+8

B (90)	24	35	72	34	56	45	36	60
	+35	+44	+46	+35	+32	+43	+51	+28

C (92)	364	357	840	713	625	454	532	427
	+615	+432	+125	+243	+320	+325	+257	+421

D (117)	58	67	19	47	39	18	49	28	15	34
	+36	+29	+45	+34	+57	+69	+16	+43	+17	+39
	26	59	67	15	48	34	42	18	53	36
	+57	+12	+18	+26	+47	+38	+28	+62	+19	+49

E (142)	85	64	68	53	76	58	47	78	95	24
	+76	+89	+45	+98	+85	+64	+78	+75	+69	+97

F (150)	357	632	459	538	156	864	753	625
	+428	+349	+238	+156	+619	+127	+229	+169
	435	149	368	249	537	466	515	374
	+258	+627	+528	+324	+217	+425	+247	+318
	535	326	624	738	327	456	415	253
	+236	+457	+149	+253	+328	+219	+465	+528

G (151)

357	315	628	224	146	226	435	129
214	357	149	438	215	549	328	437
+326	+217	+122	+336	+425	+124	+235	+411

H (164)

594	495	741	382	874	496	278	664
+273	+194	+265	+563	+172	+462	+771	+253

537	245	156	592	483	536	724	675
+182	+583	+672	+252	+356	+192	+194	+282

I (165)

386	597	385	564	298	183	496	678
+297	+184	+386	+269	+594	+758	+376	+282

138	593	619	458	364	737	154	723
+762	+359	+181	+258	+479	+197	+646	+197

J (186)

6	9	8	5	76	84	486	157	$3.75
7	4	9	8	49	59	275	296	2.89
+9	+8	+9	+7	+27	+78	+149	+289	+1.68

4	8	5	8	97	59	397	489	$9.87
9	9	7	8	68	76	577	797	5.79
5	6	9	9	59	88	498	688	1.85
+7	+7	+9	+7	+84	+69	+699	+497	+4.99

8	7	9	6	59	87	596	789	$8.79
8	6	9	8	67	98	868	967	7.99
9	9	7	8	58	69	798	879	5.87
+9	+9	+9	+9	+39	+89	+978	+967	+9.96

Notice the page number in red in front of each group of problems. When you have studied the work in your book through this page, you are ready to do these problems.

One Hundred Subtraction Facts

0 −0 0	1 −0 1	2 −0 2	3 −0 3	4 −0 4	5 −0 5	6 −0 6	7 −0 7	8 −0 8	9 −0 9
1 −1 0	2 −1 1	3 −1 2	4 −1 3	5 −1 4	6 −1 5	7 −1 6	8 −1 7	9 −1 8	10 −1 9
2 −2 0	3 −2 1	4 −2 2	5 −2 3	6 −2 4	7 −2 5	8 −2 6	9 −2 7	10 −2 8	11 −2 9
3 −3 0	4 −3 1	5 −3 2	6 −3 3	7 −3 4	8 −3 5	9 −3 6	10 −3 7	11 −3 8	12 −3 9
4 −4 0	5 −4 1	6 −4 2	7 −4 3	8 −4 4	9 −4 5	10 −4 6	11 −4 7	12 −4 8	13 −4 9
5 −5 0	6 −5 1	7 −5 2	8 −5 3	9 −5 4	10 −5 5	11 −5 6	12 −5 7	13 −5 8	14 −5 9
6 −6 0	7 −6 1	8 −6 2	9 −6 3	10 −6 4	11 −6 5	12 −6 6	13 −6 7	14 −6 8	15 −6 9
7 −7 0	8 −7 1	9 −7 2	10 −7 3	11 −7 4	12 −7 5	13 −7 6	14 −7 7	15 −7 8	16 −7 9
8 −8 0	9 −8 1	10 −8 2	11 −8 3	12 −8 4	13 −8 5	14 −8 6	15 −8 7	16 −8 8	17 −8 9
9 −9 0	10 −9 1	11 −9 2	12 −9 3	13 −9 4	14 −9 5	15 −9 6	16 −9 7	17 −9 8	18 −9 9

Special Practice Exercises—Subtraction

Gold

A (88)

13	17	15	12	11	13	11	18	14	10
−8	−9	−9	−5	−7	−4	−5	−9	−8	−6
14	11	12	13	17	14	11	11	12	13
−7	−8	−3	−6	−8	−6	−2	−6	−8	−5
15	14	11	16	13	14	13	12	16	11
−8	−9	−9	−8	−9	−5	−7	−4	−9	−4
16	12	10	15	10	10	12	12	15	11
−7	−9	−3	−7	−5	−2	−7	−6	−6	−3

copy

B (91)

58	69	75	34	29	84	63	95	49	98
−24	−35	−13	−21	−17	−62	−51	−44	−26	−23

C (93)

684	859	765	497	528	394	697	869
−352	−234	−524	−186	−214	−172	−436	−231

D (130)

85	63	76	58	94	57	72	86	63	74
−36	−28	−19	−39	−57	−28	−49	−68	−24	−25

E (162)

756	653	984	752	468	376	875	672
−218	−325	−657	−439	−239	−127	−538	−417

F (168)

829	457	715	935	647	869	574	486
−437	−183	−262	−573	−392	−486	−292	−193

G (170)

642	758	576	984	651	872	944	831
−275	−589	−198	−586	−258	−496	−657	−387

H (199)

600	754	815	578	634	703	800	510
−199	−394	−409	−250	−334	−592	−640	−200

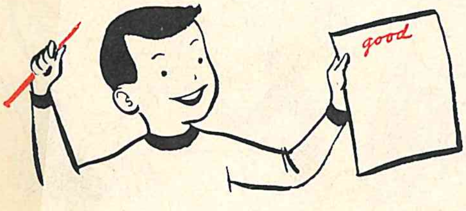
$8.50	$0.97	$9.00	$6.98	$5.13	$0.90
−8.35	−0.37	−5.59	−2.98	−1.04	−0.02

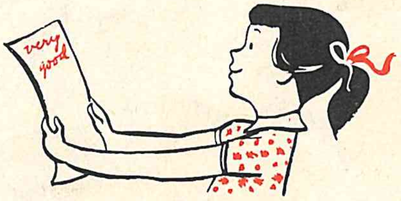
Some Important Multiplication Facts

$\begin{array}{r}0\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 1\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 2\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 3\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 4\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 5\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 6\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 7\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 8\\ \hline 0\end{array}$	$\begin{array}{r}0\\ \times 9\\ \hline 0\end{array}$
$\begin{array}{r}1\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}1\\ \times 1\\ \hline 1\end{array}$	$\begin{array}{r}1\\ \times 2\\ \hline 2\end{array}$	$\begin{array}{r}1\\ \times 3\\ \hline 3\end{array}$	$\begin{array}{r}1\\ \times 4\\ \hline 4\end{array}$	$\begin{array}{r}1\\ \times 5\\ \hline 5\end{array}$	$\begin{array}{r}1\\ \times 6\\ \hline 6\end{array}$	$\begin{array}{r}1\\ \times 7\\ \hline 7\end{array}$	$\begin{array}{r}1\\ \times 8\\ \hline 8\end{array}$	$\begin{array}{r}1\\ \times 9\\ \hline 9\end{array}$
$\begin{array}{r}2\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}2\\ \times 1\\ \hline 2\end{array}$	$\begin{array}{r}2\\ \times 2\\ \hline 4\end{array}$	$\begin{array}{r}2\\ \times 3\\ \hline 6\end{array}$	$\begin{array}{r}2\\ \times 4\\ \hline 8\end{array}$	$\begin{array}{r}2\\ \times 5\\ \hline 10\end{array}$	$\begin{array}{r}2\\ \times 6\\ \hline 12\end{array}$	$\begin{array}{r}2\\ \times 7\\ \hline 14\end{array}$	$\begin{array}{r}2\\ \times 8\\ \hline 16\end{array}$	$\begin{array}{r}2\\ \times 9\\ \hline 18\end{array}$
$\begin{array}{r}3\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}3\\ \times 1\\ \hline 3\end{array}$	$\begin{array}{r}3\\ \times 2\\ \hline 6\end{array}$	$\begin{array}{r}3\\ \times 3\\ \hline 9\end{array}$	$\begin{array}{r}3\\ \times 4\\ \hline 12\end{array}$	$\begin{array}{r}3\\ \times 5\\ \hline 15\end{array}$	$\begin{array}{r}3\\ \times 6\\ \hline 18\end{array}$	$\begin{array}{r}3\\ \times 7\\ \hline 21\end{array}$	$\begin{array}{r}3\\ \times 8\\ \hline 24\end{array}$	$\begin{array}{r}3\\ \times 9\\ \hline 27\end{array}$
$\begin{array}{r}4\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}4\\ \times 1\\ \hline 4\end{array}$	$\begin{array}{r}4\\ \times 2\\ \hline 8\end{array}$	$\begin{array}{r}4\\ \times 3\\ \hline 12\end{array}$	$\begin{array}{r}4\\ \times 4\\ \hline 16\end{array}$	$\begin{array}{r}4\\ \times 5\\ \hline 20\end{array}$	$\begin{array}{r}4\\ \times 6\\ \hline 24\end{array}$	$\begin{array}{r}4\\ \times 7\\ \hline 28\end{array}$	$\begin{array}{r}4\\ \times 8\\ \hline 32\end{array}$	$\begin{array}{r}4\\ \times 9\\ \hline 36\end{array}$
$\begin{array}{r}5\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}5\\ \times 1\\ \hline 5\end{array}$	$\begin{array}{r}5\\ \times 2\\ \hline 10\end{array}$	$\begin{array}{r}5\\ \times 3\\ \hline 15\end{array}$	$\begin{array}{r}5\\ \times 4\\ \hline 20\end{array}$	$\begin{array}{r}5\\ \times 5\\ \hline 25\end{array}$	$\begin{array}{r}5\\ \times 6\\ \hline 30\end{array}$	$\begin{array}{r}5\\ \times 7\\ \hline 35\end{array}$	$\begin{array}{r}5\\ \times 8\\ \hline 40\end{array}$	$\begin{array}{r}5\\ \times 9\\ \hline 45\end{array}$
$\begin{array}{r}6\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}6\\ \times 1\\ \hline 6\end{array}$	$\begin{array}{r}6\\ \times 2\\ \hline 12\end{array}$	$\begin{array}{r}6\\ \times 3\\ \hline 18\end{array}$	$\begin{array}{r}6\\ \times 4\\ \hline 24\end{array}$	$\begin{array}{r}6\\ \times 5\\ \hline 30\end{array}$				
$\begin{array}{r}7\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}7\\ \times 1\\ \hline 7\end{array}$	$\begin{array}{r}7\\ \times 2\\ \hline 14\end{array}$	$\begin{array}{r}7\\ \times 3\\ \hline 21\end{array}$	$\begin{array}{r}7\\ \times 4\\ \hline 28\end{array}$	$\begin{array}{r}7\\ \times 5\\ \hline 35\end{array}$				
$\begin{array}{r}8\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}8\\ \times 1\\ \hline 8\end{array}$	$\begin{array}{r}8\\ \times 2\\ \hline 16\end{array}$	$\begin{array}{r}8\\ \times 3\\ \hline 24\end{array}$	$\begin{array}{r}8\\ \times 4\\ \hline 32\end{array}$	$\begin{array}{r}8\\ \times 5\\ \hline 40\end{array}$				
$\begin{array}{r}9\\ \times 0\\ \hline 0\end{array}$	$\begin{array}{r}9\\ \times 1\\ \hline 9\end{array}$	$\begin{array}{r}9\\ \times 2\\ \hline 18\end{array}$	$\begin{array}{r}9\\ \times 3\\ \hline 27\end{array}$	$\begin{array}{r}9\\ \times 4\\ \hline 36\end{array}$	$\begin{array}{r}9\\ \times 5\\ \hline 45\end{array}$				

Special Practice Exercises—Multiplication

A (211)	3 ×4	2 ×6	4 ×5	3 ×8	3 ×3	5 ×9	4 ×7	2 ×3	5 ×3	4 ×2
	4 ×6	5 ×2	2 ×7	5 ×6	3 ×6	2 ×5	4 ×8	3 ×2	5 ×8	2 ×9
	4 ×4	3 ×5	3 ×7	5 ×5	4 ×9	2 ×8	5 ×7	4 ×3	3 ×9	5 ×4
B (235)	41 ×9	52 ×4	93 ×3	84 ×3	92 ×4	41 ×3	53 ×2	42 ×4	72 ×4	62 ×4
C (236)	234 ×2	423 ×2	443 ×2	120 ×3	203 ×3	213 ×3	323 ×2	332 ×2	342 ×3	
D (237)	47 ×2	18 ×3	26 ×3	35 ×5	45 ×2	28 ×2	27 ×3	29 ×2	24 ×3	26 ×3
E (238)	85 ×3	94 ×4	53 ×5	58 ×3	46 ×3	34 ×7	32 ×8	27 ×4	36 ×4	57 ×2
F (238)	436 ×2	224 ×3	115 ×5	125 ×2	238 ×2	229 ×3	326 ×3	214 ×4		
G (245)	262 ×2	394 ×2	282 ×3	463 ×2	293 ×3	161 ×6	454 ×2	253 ×3		
H (249)	150 ×4	237 ×4	126 ×5	395 ×2	208 ×4	129 ×4	356 ×2	$2.39 ×3		

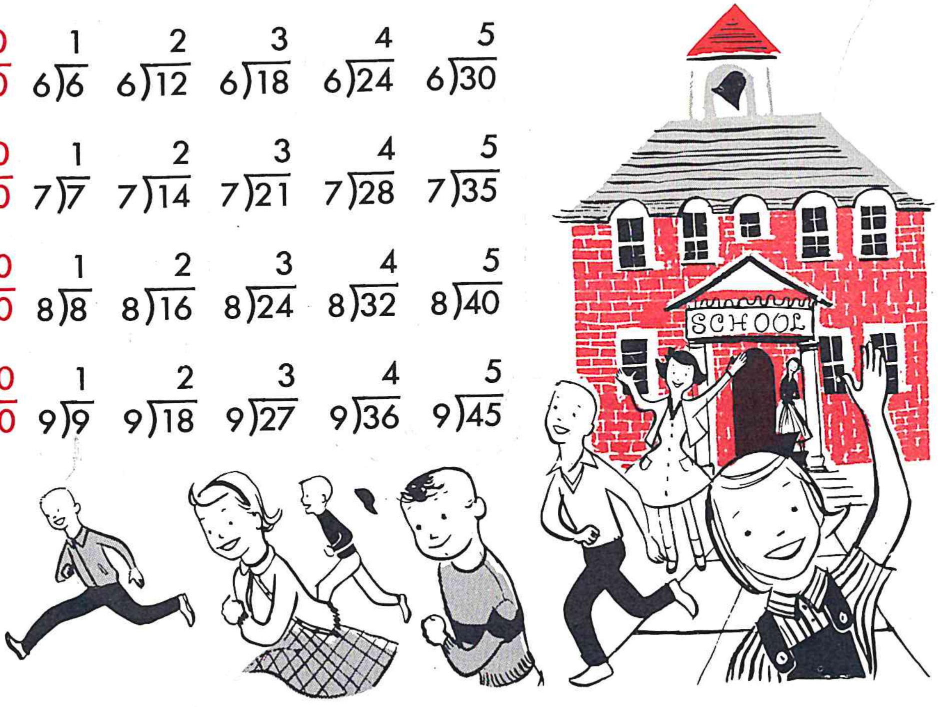




Some Important Division Facts

The facts having a zero are shown in red. The facts having no zero are shown in black.

$\begin{array}{r}0\\1\overline{)0}\end{array}$	$\begin{array}{r}1\\1\overline{)1}\end{array}$	$\begin{array}{r}2\\1\overline{)2}\end{array}$	$\begin{array}{r}3\\1\overline{)3}\end{array}$	$\begin{array}{r}4\\1\overline{)4}\end{array}$	$\begin{array}{r}5\\1\overline{)5}\end{array}$	$\begin{array}{r}6\\1\overline{)6}\end{array}$	$\begin{array}{r}7\\1\overline{)7}\end{array}$	$\begin{array}{r}8\\1\overline{)8}\end{array}$	$\begin{array}{r}9\\1\overline{)9}\end{array}$
$\begin{array}{r}0\\2\overline{)0}\end{array}$	$\begin{array}{r}1\\2\overline{)2}\end{array}$	$\begin{array}{r}2\\2\overline{)4}\end{array}$	$\begin{array}{r}3\\2\overline{)6}\end{array}$	$\begin{array}{r}4\\2\overline{)8}\end{array}$	$\begin{array}{r}5\\2\overline{)10}\end{array}$	$\begin{array}{r}6\\2\overline{)12}\end{array}$	$\begin{array}{r}7\\2\overline{)14}\end{array}$	$\begin{array}{r}8\\2\overline{)16}\end{array}$	$\begin{array}{r}9\\2\overline{)18}\end{array}$
$\begin{array}{r}0\\3\overline{)0}\end{array}$	$\begin{array}{r}1\\3\overline{)3}\end{array}$	$\begin{array}{r}2\\3\overline{)6}\end{array}$	$\begin{array}{r}3\\3\overline{)9}\end{array}$	$\begin{array}{r}4\\3\overline{)12}\end{array}$	$\begin{array}{r}5\\3\overline{)15}\end{array}$	$\begin{array}{r}6\\3\overline{)18}\end{array}$	$\begin{array}{r}7\\3\overline{)21}\end{array}$	$\begin{array}{r}8\\3\overline{)24}\end{array}$	$\begin{array}{r}9\\3\overline{)27}\end{array}$
$\begin{array}{r}0\\4\overline{)0}\end{array}$	$\begin{array}{r}1\\4\overline{)4}\end{array}$	$\begin{array}{r}2\\4\overline{)8}\end{array}$	$\begin{array}{r}3\\4\overline{)12}\end{array}$	$\begin{array}{r}4\\4\overline{)16}\end{array}$	$\begin{array}{r}5\\4\overline{)20}\end{array}$	$\begin{array}{r}6\\4\overline{)24}\end{array}$	$\begin{array}{r}7\\4\overline{)28}\end{array}$	$\begin{array}{r}8\\4\overline{)32}\end{array}$	$\begin{array}{r}9\\4\overline{)36}\end{array}$
$\begin{array}{r}0\\5\overline{)0}\end{array}$	$\begin{array}{r}1\\5\overline{)5}\end{array}$	$\begin{array}{r}2\\5\overline{)10}\end{array}$	$\begin{array}{r}3\\5\overline{)15}\end{array}$	$\begin{array}{r}4\\5\overline{)20}\end{array}$	$\begin{array}{r}5\\5\overline{)25}\end{array}$	$\begin{array}{r}6\\5\overline{)30}\end{array}$	$\begin{array}{r}7\\5\overline{)35}\end{array}$	$\begin{array}{r}8\\5\overline{)40}\end{array}$	$\begin{array}{r}9\\5\overline{)45}\end{array}$
$\begin{array}{r}0\\6\overline{)0}\end{array}$	$\begin{array}{r}1\\6\overline{)6}\end{array}$	$\begin{array}{r}2\\6\overline{)12}\end{array}$	$\begin{array}{r}3\\6\overline{)18}\end{array}$	$\begin{array}{r}4\\6\overline{)24}\end{array}$	$\begin{array}{r}5\\6\overline{)30}\end{array}$				
$\begin{array}{r}0\\7\overline{)0}\end{array}$	$\begin{array}{r}1\\7\overline{)7}\end{array}$	$\begin{array}{r}2\\7\overline{)14}\end{array}$	$\begin{array}{r}3\\7\overline{)21}\end{array}$	$\begin{array}{r}4\\7\overline{)28}\end{array}$	$\begin{array}{r}5\\7\overline{)35}\end{array}$				
$\begin{array}{r}0\\8\overline{)0}\end{array}$	$\begin{array}{r}1\\8\overline{)8}\end{array}$	$\begin{array}{r}2\\8\overline{)16}\end{array}$	$\begin{array}{r}3\\8\overline{)24}\end{array}$	$\begin{array}{r}4\\8\overline{)32}\end{array}$	$\begin{array}{r}5\\8\overline{)40}\end{array}$				
$\begin{array}{r}0\\9\overline{)0}\end{array}$	$\begin{array}{r}1\\9\overline{)9}\end{array}$	$\begin{array}{r}2\\9\overline{)18}\end{array}$	$\begin{array}{r}3\\9\overline{)27}\end{array}$	$\begin{array}{r}4\\9\overline{)36}\end{array}$	$\begin{array}{r}5\\9\overline{)45}\end{array}$				



Special Practice Exercises—Division

A (271)

$6\overline{)12}$ $3\overline{)18}$ $8\overline{)24}$ $5\overline{)40}$ $4\overline{)24}$ $9\overline{)27}$ $5\overline{)25}$ $7\overline{)21}$

$4\overline{)36}$ $5\overline{)15}$ $3\overline{)21}$ $5\overline{)35}$ $6\overline{)18}$ $2\overline{)14}$ $4\overline{)28}$ $7\overline{)35}$

$3\overline{)27}$ $9\overline{)45}$ $3\overline{)24}$ $7\overline{)14}$ $4\overline{)16}$ $8\overline{)40}$ $9\overline{)36}$ $5\overline{)20}$

$6\overline{)18}$ $5\overline{)45}$ $6\overline{)30}$ $4\overline{)32}$ $5\overline{)30}$ $3\overline{)15}$ $8\overline{)32}$ $4\overline{)20}$

B (284)

$3\overline{)36}$ $2\overline{)84}$ $4\overline{)44}$ $2\overline{)24}$ $3\overline{)66}$ $2\overline{)46}$ $4\overline{)80}$ $2\overline{)20}$

C (286)

$2\overline{)486}$ $3\overline{)639}$ $4\overline{)448}$ $2\overline{)644}$ $4\overline{)848}$ $3\overline{)\$9.36}$

$4\overline{)884}$ $3\overline{)696}$ $2\overline{)468}$ $2\overline{)628}$ $3\overline{)396}$ $2\overline{)\$4.62}$

D (287)

$3\overline{)189}$ $4\overline{)284}$ $7\overline{)147}$ $9\overline{)279}$ $4\overline{)324}$ $3\overline{)\$2.16}$

$4\overline{)164}$ $3\overline{)273}$ $2\overline{)126}$ $6\overline{)246}$ $8\overline{)328}$ $5\overline{)\$2.55}$

E (289)

$\frac{1}{4}$ of 32 = $\boxed{?}$ $\frac{1}{5}$ of 45 = $\boxed{?}$ $\frac{1}{3}$ of 39 = $\boxed{?}$ $\frac{1}{2}$ of 28 = $\boxed{?}$

$\frac{1}{3}$ of 18 = $\boxed{?}$ $\frac{1}{4}$ of 12 = $\boxed{?}$ $\frac{1}{2}$ of 16 = $\boxed{?}$ $\frac{1}{5}$ of 35 = $\boxed{?}$

$\frac{1}{2}$ of 42 = $\boxed{?}$ $\frac{1}{3}$ of 63 = $\boxed{?}$ $\frac{1}{5}$ of 20 = $\boxed{?}$ $\frac{1}{4}$ of 40 = $\boxed{?}$

F (301)

$2\overline{)5}$ $3\overline{)19}$ $4\overline{)17}$ $3\overline{)22}$ $4\overline{)25}$ $3\overline{)14}$ $5\overline{)32}$ $2\overline{)3}$

G (302)

$3\overline{)95}$ $4\overline{)86}$ $5\overline{)56}$ $2\overline{)47}$ $3\overline{)68}$ $5\overline{)59}$ $4\overline{)46}$ $3\overline{)64}$

$3\overline{)125}$ $5\overline{)159}$ $2\overline{)169}$ $5\overline{)157}$ $4\overline{)287}$ $2\overline{)463}$ $3\overline{)276}$

$4\overline{)847}$ $3\overline{)964}$ $4\overline{)486}$ $2\overline{)625}$ $3\overline{)938}$ $4\overline{)889}$ $5\overline{)257}$

INDEX

- **abacus,** 27, 46, 70, 97, 149, 214, 314
- **abbreviation**
  - for day, 298
  - for dozen, 75
  - for foot, 148, 297
  - for gallon, 295
  - for hour, 138, 298
  - for inch, 148, 297
  - for minute, 138, 298
  - for pint, 295
  - for pound, 66
  - for quart, 295
  - for week, 298
  - for yard, 297
- **addition**
  - by endings, 126–128, 182
  - carrying in, 116–117, 130, 141–142, 150–151, 153, 158–159, 164–165, 183
  - checking of, 99, 101, 103, 133, 160, 179, 184
  - column, 99–101, 103, 114–115, 125, 128, 133–135, 151, 154, 156, 158–160, 164–165, 183–187, 317
  - definition of, 30
  - doubles in, 45, 108
  - helper cards for, 40–41, 69, 81, 83–86
  - of money numbers, 68, 84, 102, 112, 130–131, 133, 135, 153–154, 156, 173, 197
  - of 3-place numbers, 60, 92, 94–95, 125, 150–151, 164–165, 186–187, 200, 316–317
  - of 2-place numbers, 60, 90, 94–95, 101, 116–117, 126–128, 130–131, 135, 142–143, 158–159, 179, 185–187, 316
  - sign of, 32
  - with empty spaces, 135, 151, 186–187
  - zero in, 62, 69, 315
- **addition facts,** 36–38, 69, 77, 81, 83–86, 180–181, 315
- **addition helps**
  - counting by ones, 7–9, 11, 29–30, 35, 43, 78, 112
  - counting groups, 16–17, 24–26, 60, 73, 75, 78–79, 82, 92, 116, 130, 141
  - dot drawing, 29, 35, 43, 73, 75, 85–86
  - number line, 31, 35, 60, 78–79, 82
  - place-value frame, 60, 73, 75, 82, 84–86, 90, 92, 102, 112, 116–117, 135, 141–142, 150–151, 158
- **addition practice,** 35, 37, 39, 42, 45, 48, 82, 88, 90, 92, 94–95, 98, 101–103, 114, 117, 121, 123, 126–129, 130–131, 133–135, 142–143, 145, 150–151, 154, 156, 158–159, 164–165, 167, 172–173, 179, 182–187, 197, 200, 202, 204, 220, 267, 290, 316–317
- **addition problems,** 7–8, 11, 28, 30, 33, 44, 78–79, 82, 84–86, 90, 92, 98–99, 101–102, 112, 116, 122, 130–131, 133, 135, 141–142, 150–151, 158–159, 164–166, 179, 184–185

- **borrowing in subtraction,** 118–119, 132, 155, 162, 168, 170, 192–196

- **calendar,** 20
- **carrying**
  - in addition, 116–117, 130, 141–142, 150–151, 153, 158–159, 164–165, 183
  - in multiplication, 237–238, 241, 245–246
- **cents point,** 111, 152–153, 234, 247–248, 286
- **cents sign,** 68, 102, 234, 247
- **change making,** 157
- **checking**
  - of addition, 99, 101, 103, 133, 160, 179, 184
  - of division, 259, 271, 284
  - of multiplication, 236–238
  - of subtraction, 163
- **clock,** 136–139, 298
- **coins,** 13, 108, 110–111
- **column addition,** 99–101, 103, 114–115, 125, 128, 133–135, 151, 154, 156, 158–160, 164–165, 183–187, 317

counting
  by fives, 108
  by tens, 24, 108
  by threes, 230
  by twos, 75, 108

day, 298
days of the week, 20
difference in subtraction, 53, 58
dividend, 261
division
  checking of, 259, 271, 284
  definition of, 256
  helper cards for, 280, 282, 287–288
  of money numbers, 286–288, 291–292, 294, 302
  of more than two digits, 285, 287, 323
  sign of, 258, 283
  with five, 288
  with four, 287
  with remainder, 299–302, 323
  with three, 282
  with 3-digit quotient, 285–286, 323
  with two, 280
  with 2-digit quotient, 284, 287, 290, 293, 323
  zero in, 322
division facts, 263–265, 280, 282, 287–288, 322
division helps
  dot drawing, 255–260, 278, 284, 292, 299
  number line, 255, 257, 263, 292
  subtracting equal groups, 255–259, 264, 293
division practice, 259, 261–262, 264–265, 267, 269–271, 273, 279, 284–287, 290, 291–293, 299–301, 323
division problems, 255–258, 260, 275–288, 291, 299, 301–302
divisor, 261
dollar sign, 111, 234, 247–248, 286
dot drawing
  in addition, 29, 35, 43, 73, 75, 85–86
  in division, 255–260, 278, 284, 292, 299
  in multiplication, 216, 229–230
  in subtraction, 50, 52–53, 74, 80, 83, 86, 93
doubles in addition, 45, 108
dozen, 75

endings in addition, 126–128, 182
equal sign, 29, 43

facts
  in addition, 36–38, 69, 77, 81, 83–86, 180–181, 315
  in division, 263–265, 280, 282, 287–288, 322
  in multiplication, 206–207, 209, 211, 215–216, 219, 228–231, 239–240, 243–244, 320
  in subtraction, 54–55, 69, 74, 76–77, 81, 83–86, 318
five
  counting by, 108
  division facts for, 288
  multiplication facts for, 243–244
foot, 148, 297
four
  division facts for, 287
  multiplication facts for, 239–240
fraction problems, 109, 275–277, 279, 281–282, 289, 291–292, 294, 323
fractions
  explanation of, 18–19, 104–107, 109, 275
  one fifth of a group, 276, 278, 289, 291–292, 294, 323
  one fifth of a whole, 275
  one fourth of a group, 19, 109, 276–278, 289, 291–292, 294, 323
  one fourth of a whole, 18, 105, 275
  one half of a group, 19, 109, 277–279, 291–292, 323
  one half of a whole, 18, 104, 275
  one third of a group, 276–278, 281–282, 291–292, 323
  one third of a whole, 107, 275
  writing of, 18, 104–105, 107, 275

gallon, 295–296
games
  in addition, 9, 41–42, 64–65, 100, 129, 180–181

in division, 270
in multiplication, 241, 249
in subtraction, 55–56, 65, 74, 161, 191

half dollar, 110–111
half hour, 138
helper cards
for addition, 40–41, 69, 81, 83–86
for division, 280, 282, 287–288
for multiplication, 210–211, 213, 228–229, 231, 239–240, 244
for subtraction, 55, 69, 74, 76, 81, 83–86
hour, 137–139, 298

inch, 148, 297

linear measure, 147–148, 297
liquid measure, 295–296

measure
calendar, 20
clock, 136–139, 298
linear, 147–148, 297
liquid, 295–296
time, 298
weight, 66
minus sign, 51
minute, 137–139, 298
mixed practice, 57, 59, 64–65, 68, 77, 81, 87, 96, 115, 120, 146, 208, 217, 250–251, 303
mixed problems, 57, 59, 63, 68, 72, 120, 124, 144, 146, 171, 174, 197, 204, 212, 217–218, 221, 268–269, 274, 294, 308–313
mixed races, 115, 250–251
money numbers
addition of, 68, 84, 102, 112, 130–131, 133, 135, 153–154, 156, 173, 197
division of, 286–288, 291–292, 294, 302
multiplication of, 234, 237, 247–248
reading of, 68, 111, 152–154
subtraction of, 113, 132, 155–156, 173, 188–189, 196
writing of, 111, 153–154, 156
money signs, 68, 102, 111, 234, 247–248, 286
money values, 13, 108, 110–111
months of the year, 20

multiplication
carrying in, 237–238, 241, 245–246
checking of, 236–238
definition of, 208
helper cards for, 210–211, 213, 228–229, 231, 239–240, 244
of money numbers, 234, 237, 247–248
of 3-place numbers, 236, 238, 242, 245–246, 249, 252–254
of 2-place numbers, 234–235, 237–238, 240, 252–254
sign of, 207, 227
with five, 243–244
with four, 239–240
with three, 219, 230–231
with two, 215, 228–229
zero in, 232–233, 320
multiplication helps
addition of equal groups, 205–206, 209, 215, 223, 227, 229–230, 232, 234–235, 239, 243, 293
counting ones, 206, 209, 230
dot drawing, 216, 229–230
number line, 206, 209, 213, 216, 219
multiplication facts, 206–207, 209, 211, 215–216, 219, 228–231, 239–240, 243–244, 320
multiplication practice, 209–210, 213, 218, 222–223, 226, 231, 233–238, 240–242, 245–249, 252–254, 267, 290, 321
multiplication problems, 206, 212, 215, 223, 227–228, 230, 232–238, 242–243, 245–248, 252, 254

number line
addition on, 31, 35, 60, 78–79, 82
division on, 255, 257, 263, 292
multiplication on, 206, 209, 213, 216, 219
subtraction on, 52–53, 61, 80, 85
numbers
even, 22–23, 67
odd, 21–23, 67
reading of, 15, 20, 22, 26–27, 154, 175–178, 314
writing of, 2, 10, 15, 26–27, 67, 149, 154, 175–176, 178, 214

one fifth
  explanation of, 275
  of a group, 276, 278, 289, 291–292, 294, 323
  of a whole, 275
  writing of, 275
one fourth
  explanation of, 18–19, 105–106, 109
  of a group, 19, 109, 276–278, 289, 291–292, 294, 323
  of a whole, 18, 105, 275
  writing of, 18, 105
one half
  explanation of, 18–19, 104–106, 109
  of a group, 19, 109, 277–279, 291–292, 323
  of a whole, 18, 104, 275
  writing of, 18, 104
one third
  explanation of, 107
  of a group, 276–278, 281–282, 291–292, 323
  of a whole, 107, 275
  writing of, 107

peg board, 2, 17, 24–26, 149, 214
pint, 295–296
place value, 14–15, 17, 26–27, 60, 67, 73, 75, 78, 82, 84–86, 90–93, 102, 112–113, 116–117, 135, 141–142, 149–151, 158–159, 164–165, 168, 170, 175–177, 208, 214, 226, 232–238, 246, 266, 284–285, 314
place-value frame
  for addition, 60, 73, 75, 82, 84–86, 90, 92, 102, 112, 116–117, 135, 141–142, 150–151, 158
  for subtraction, 91, 93
plus sign, 32, 43
pound, 66
practice
  in addition, 35, 37, 39, 42, 45, 48, 82, 88, 90, 92, 94–95, 98, 101–103, 114, 117, 121, 123, 126–129, 130–131, 133–135, 142–143, 145, 150–151, 154, 156, 158–159, 164–165, 167, 172–173, 179, 182–187, 197, 200, 202, 204, 220, 267, 290, 316–317
  in division, 259, 261–262, 264–265, 267, 269–271, 273, 279, 284–287, 290, 291–293, 299–301, 323
  in multiplication, 209–210, 213, 218, 222–223, 226, 231, 233–238, 240–242, 245–249, 252–254, 267, 290, 321
  in subtraction, 53–54, 56, 89, 91, 93, 98, 113, 115, 119, 121–123, 132, 143, 145, 155–156, 161–163, 167–168, 170–173, 191–196, 198–199, 201–202, 204, 220, 290, 319
  mixed, 57, 59, 64–65, 68, 77, 81, 87, 96, 115, 120, 146, 208, 217, 250–251, 303
problems
  fraction, 109, 275–277, 279, 281–282, 289, 291–292, 294, 323
  in addition, 7–8, 11, 28, 30, 33, 44, 78–79, 82, 84–86, 90, 92, 98–99, 101–102, 112, 116, 122, 130–131, 133, 135, 141–142, 150–151, 158–159, 164–166, 179, 184–185
  in division, 255–258, 260, 275–288, 291, 299, 301–302
  in multiplication, 206, 212, 215, 223, 227–228, 230, 232–238, 242–243, 245–248, 252, 254
  in subtraction, 12, 49–52, 58, 61, 74, 76, 80, 84, 91, 93, 98, 113, 118–119, 122, 132, 155, 162–163, 168–170, 188–190, 192–196, 198–199
  mixed, 57, 59, 63, 68, 72, 120, 124, 144, 146, 171, 174, 197, 204, 212, 217–218, 221, 268–269, 274, 294, 308–313
  money, 84, 102, 112–113, 130–133, 135, 144–146, 154–157, 173, 188–189, 196–197, 234, 237, 247–248, 286, 290–294, 302
product, 227

quart, 295–296
quarter dollar, 111
quarter hour, 139
quotient, 261

races
  in addition, 94–95, 114, 143, 167, 200, 220, 267, 290

  in division, 267, 290
  in multiplication, 222, 267, 290
  in subtraction, 115, 143, 167, 201, 220, 290
  mixed, 115, 250–251
reading numbers, 15, 20, 22, 26–27, 154, 175–178, 314
remainder, 299–302
Roman numerals, 140
ruler, 147–148, 297

stars
  addition with, 129
  multiplication with, 241, 249
  subtraction with, 161, 191
subtraction
  borrowing in, 118–119, 132, 155, 162, 168, 170, 192–196
  checking of, 163
  definition of, 51, 58
  helper cards for, 55, 69, 74, 76, 81, 83–86
  of money numbers, 113, 132, 155–156, 173, 188–189, 196
  of 3-place numbers, 61, 93, 162–163, 168, 170–171, 193–195, 199, 201, 319
  of 2-place numbers, 61, 91, 118–119, 132, 161, 192, 319
  symbol for, 51
  with empty spaces, 198–199, 202, 204
  zero in, 62, 69, 193, 196, 318
subtraction facts, 54–55, 69, 74, 76–77, 81, 83–86, 318
subtraction helps
  counting ones, 12, 50, 52–53, 74, 76, 80, 83, 86, 91, 93, 188
  dot drawing, 50, 52–53, 74, 80, 83, 86, 93
  number line, 52–53, 61, 80, 85
  place-value frame, 91, 93
subtraction practice, 53–54, 56, 89, 91, 93, 98, 113, 115, 119, 121–123, 132, 143, 145, 155–156, 161–163, 167–168, 170–173, 191–196, 198–199, 201–202, 204, 220, 290, 319
subtraction problems, 12, 49–52, 58, 61, 74, 76, 80, 84, 91, 93, 98, 113, 118–119, 122, 132, 155, 162–163, 168–170, 188–190, 192–196, 198–199
sum, 32
symbol
  for addition, 32
  for cents, 68, 102, 234
  for division, 258, 283
  for dollars, 111, 234
  for equality, 29, 43
  for multiplication, 207, 227
  for subtraction, 51

table
  of linear measure, 297
  of liquid measure, 295
  of time, 298
tens
  counting by, 24, 108
test and review, 46–48, 70–72, 96–98, 122–124, 144–146, 172–174, 202–204, 224–226, 252–254, 272–274, 291–294, 304–323
three
  counting by, 230
  division facts for, 282
  multiplication facts for, 219, 230–231
time, 136–139, 298
"times-and" facts, 241
times sign, 207, 227
two
  counting by, 75, 108
  division facts for, 280
  multiplication facts for, 215, 228–229

week, 20, 298
weight, 66
writing of numbers, 2, 10, 15, 26–27, 67, 149, 154, 175–176, 178, 214

yard, 297

zero
  as place holder, 177
  in addition, 62, 69, 315
  in division, 322
  in dollars place, 153
  in multiplication, 232–233, 320
  in subtraction, 62, 69, 193, 196, 318

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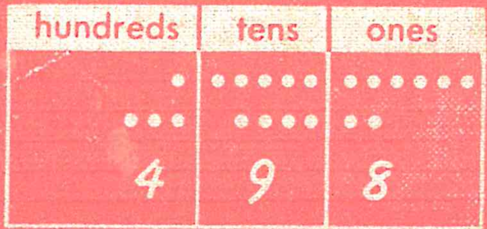
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